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Editorials

POLITICAL MANIPULATIONS ARE ENDANGERING THE VERY EXISTENCE OF OLD AGE SECURITY

Social Security, to which Abraham Epstein, since 1927 executive director for the American Association for Social Security, says: "We have been converted overnight and which is the newest of all new industries in this new country of new industries, is according to Epstein himself, "being killed with kindness." Let us hope Mr. Epstein is correct about the slaughter.

Says Mr. Epstein, writing in *Harper's Magazine*: *"Social Security, flower of the New Deal, is here."*

The American weakness for panaceas is Mr. Epstein's conclusion for this sudden national acceptance of a cure-all for poverty in the future if not in the present nor in the past. He blames also our national appetite for advertising slogans and our everlasting Barnum complex. Mr. Epstein connotes that the American citizen felt the depression more keenly than did any other nation on earth because of our "Higher standard of Living;" which is exactly what all the socialists and theorists fail to take into account when they try to force upon American citizens the crutches for a high standard (?) of living that Europe is adopting with pretty poor results.

The depression was so drastic, it so completely undermined everything that through the years America had come to regard as *security* that in the search for salvation the poor deluded population turned to ineffectual schemes that do nothing more than offer a relief that is worse than the disease. This is like the parched man who slakes his thirst at a poisoned well or fever-laden stream. In his extremity, he grasps at the first seeming succor.

In December, 1935, in *Harpers,* Epstein wrote a most able article in which he told of the "implications and limitations of the Social Security Act." Still quoting him directly it is interesting to note that he says of his more recent contribution, the article remarking that we are

killing with kindness the old age security act, he says in part: "That first article showed that instead of seeking greater security by *increasing the purchasing power of the masses as all sound social insurance programs have done the insurance features of our Act tend to aggravate insecurity by placing practically the entire financial burden upon the poorest sectors of the population.* Instead of diverting some portion of the income of the higher brackets which is not used for direct consumption, into mass purchasing power our insurance program merely sets up a system which *obliges the poor to share their poverty in order to sustain the impoverished.* In taxing only the wage-earners and their employers, the Act not only relieves the wealthy from their share of the social burden of indigency which through the poor laws, *they have helped to carry for over 300 years,* but makes possible only scant protection to the needy. It ignores the ten million present unemployed and offers little help to the future unemployed. Furthermore the heavy direct withdrawals from workers' wages can only result in a further reduction of mass purchasing power. Payroll taxes will be passed on to the consumers in the form of increased living costs and will intensify the displacement of men by machines in the attempt to reduce labor costs."

Epstein pursues this theme further remarking that a few years ago no one would have believed that the United States today would be thus far on the road to "Social Security." He cites that the first annual report of the Social Security Board showed that in the first eleven months of its existence about a million and a half individuals were aided (about two-thirds of these aged persons) at a cost to the Federal Government alone of $109,000,000. He does not say what percentage of these funds was eaten up by political job-holders. All but seven States received Federal Funds under the Act and over twenty-two million workers were registered for their old age insurance accounts. He adds too, that by the end of 1936 unemployment insurance laws enacted in 35 States and the District of Columbia covered about eighteen million workers.

Epstein has figured out that the Social Security Act covers ten different insurance and welfare plans based on three different philosophies of governmental operation. Except in Wisconsin, unemployment insurance benefits will not be paid before 1938 and the old age contributory benefits do not begin until 1942.

Since the Social Security Act began to function here is the difference in one instance, but one which is typical.

Up until the Social Security Act was signed on August 14, 1935, total expenditures for that year in old age pensions from twenty-seven states amounted to something like $66,000,000. At the end of 1936, forty states, the District of Columbia and Hawaii, had increased the number of pensioners from 403,762 persons in 1935 to 1,107,479 persons in 1936 and the pension ante had jumped to almost $155,000,000 not including $600,000 more paid out in such pensions by Arizona that had an argument with the government over its plan for such aid. *In other words, in one year the number of pensioners practically trebled, the expenditures increased two and one-half times, and the number of pension paying states was increased by something less than fifty per cent.*

Federal aid was supposed to equalize old age assistance throughout the country but figures do not reveal that it has achieved this end. As a matter of fact the reverse seems true. In December, 1935, the amounts of the pensions ranged from $4.35 to $23.15 per month. In December, 1936, the gamut ran from $3.92 to $31.96 per month according to whether a man lived in Mississippi or California. Colorado paid an average pension of $27.65 per month and Arkansas only $9.01. Even counties in the same state fell out of plumb. Thomas Co., Nebraska, paid average pensions of $7.38 per month and Gosper Co., Neb., pensions of $21.35 per month. Everywhere these same divergences maintain. They are noted in age, class and number of pensioners as against the comparative wealth and population of the various states and everywhere the difference is discouraging and disproportionate. All of which goes to show that the civilian old age pension list is behaving like all other of our pension lists. Or to quote Epstein:

"The striking divergence in the number of pensioners in the different states is simply due to the fact that our old age security system is developing in the traditionally 'American Way' . . . it is in line with our traditional jobholding philosophy—'To the victor belongs the spoils' which has characterized practically every admin-

istration since Jackson. In other words it is reverting to our typical spendthrift and generous way of using pension systems for the political good they do. . . Significantly the greatest number of pension bills are in the States which already have the most liberal laws. Legislators everywhere are outbidding one another in order to appease the appetite of organized pension blocs."

Mr. Epstein cities at length and with interest the flagrant political manipulation of the pension plans in Ohio and Colorado. In Ohio the monthly State expenditures increased in a year (*and after an election*) from a million a month to almost $2,400,000. In Colorado there was a thirty-six per cent increase in one single month or a jump from $460,325 to $628,312. Colorado has amended its Constitution so that the minimum old age pension is $45 per month and the maximum as "blue sky" as many a mining stock has been. Texas has the most liberal pension act in the country—and on the first day of its operation 40,000 were pensioned. That was only 12,000 less than New York State had pensioned in five years. Oklahoma's superlatively large number of pensioners astonishes even the state census takers. Kentucky and Illinois have both become pension conscious, since, as Epstein remarks, Federal aid was up before the public in an election year. "Illinois," says he, "which for fifteen years had withstood pressure for old age pensions enacted a law in 1935 when federal aid became imminent. Pension payments delayed for many months were rushed as soon as federal cash enabled the State *administration to appoint some 400 state investigators* during the campaign to "assist local officials," although by law they were supposed to be appointed by county boards. Similar events occurred in many other States. . . Indeed the pressures of 1936 were not for the realization of the fundamental aims of the Social Security Act but simply to boost pensions in the traditional American manner."

And again: "The political manipulations are indeed endangering the very existence of old age security. As the facts are revealed the universal approval which greeted earlier and well-administrated laws is being succeeded by nationwide protest against the entire pension movement. . . While there is no longer any question of the need for self-respecting assistance for the dependent aged it is also plain that we cannot hope to operate a system of old age security in the traditional American fashion."

Mr. Epstein would seem to feel that what is typical of the fashion in which old age pensions have been handled is typical of the management of other current relief projects. Relief and aid and all the other New Deal-isms are well called a political pie counter. And political pie comes from taxes and taxes alone. The lesson of pre-Revolutionary France is forgotten by post-Revolutionary America. God grant we are not now again "pre-Revolutionary"!

Epstein says that Social Security legislation of a sane content is threatened on two fronts. "On the one side are the interests which are against the idea altogether, and on the other the political fraternity that see in pensions and social insurance the source of another slush fund."

He forgets the third front—the individual who is still an old-fashioned American in his heart and in his ideals and who believes that the doctrines of *self-reliance* and honest politics that built up the nation may yet repair and rebuild it, but Epstein is right when he says:

"Prosperity and pensions are not synonymous."

WHAT SOCIALIZED SYSTEMS OF MEDICINE ACTUALLY DO TO THE PATIENT AND THE PHYSICIAN AS TOLD BY EYEWITNESSES CHAFING UNDER THE BURDEN

The voice of experience knows that of which it speaks. So it will not be amiss for even partial advocates of Senator James Hamilton Lewis' purposed federalization of physicians to hearken to a few eye-witness' statements as to how government control of medicine works out.

From American physicians studying medicine in various European capitals came the direct reports, the EYEWITNESS STATEMENTS of current results of this compulsory health insurance which so many enemies of American ideals are determined to foist upon the American public. Embodied in an editorial published in the July issue of *"Ars Medici,"* official journal of The American Medical Association of Vienna, we consider the editorial worthy of republication here.

The shock experienced when we heard the statement

of J. Hamilton Lewis at the A.M.A. in Atlantic City, was not fully ameliorated when we learned that Mr. Lewis was not officially representing the government because we, of the A.M.A. of Vienna, feel that his speech was a trial-balloon.

No one is in a better position to observe and judge socialized medicine than doctors who are studying in Europe—in the very midst of this institution. There are physicians among us who have studied in all parts of the world and have had the opportunity to study socialized medicine from all angles as well as elaborately discuss it with authorities. In Austria nearly 90 per cent of the population are members of official or private sick-assurance companies. As a result private practice has nearly ceased to exist. The compulsory state-insurance alone comprises 2,000,000 persons, that is about one-third of the total population. The efforts of the Austrian physicians to limit state-insurance to a certain higher income group ($160 a month) yielded no result so that a situation remains allowing directors of industrial enterprises, banks, the highest state employes and their families, etc. medical treatment, medicaments, operations, medicinal baths, health resorts, etc., nearly free of charge. The insurances cover a maximum income of $80 monthly regardless of the actual income, so that an income of $400 leaves $320, which is not considered by this method of insurance. 20¼ per cent of the income of employes and workers is deducted for social insurance, that means an income of nearly $100,000,000 for the company which insures the merchant-manufacturer-professional group alone.

ADVANTAGES ENUMERATED

Advantages: Medical help is assured along with medicaments, operations, hospital fees, bandages, apparatus, spectacles, care of teeth, baths, recovery homes, etc., and in case of inability, financial help for a certain time, i. e., the above insured, from the 4th week of illness up to one year, gets a compensation, and if ill longer, he is declared an invalid and receives a pension (Rente), which he of course again loses on getting well.

MANY BAD FEATURES LISTED

Disadvantages: A new element has been interposed between patient and physician, the bureaucratism, which destroys the essential factor in the relationship—the confidence. The insureds have the tendency to get as much as possible for the money they regularly pay. A physician has to work not only in the interest of the patient (his essential duty) but also to protect the interests of his company. The sick fund creates unwillingness to work and the old truth, "Cure is accelerated by the will to work and earn again," goes astray. The desire for recovery is undermined by the possibility of getting money without working. In periods of prosperity the number of the disabled decreases and, conversely, during a crisis, it rises enormously. The patient prefers the physician who makes the least difficulties for him in his effort to get support without working, i.e., confirms his disability. This is best realized in an incident which occurred a few years ago in Germany. The government ordered a re-examination when the number of the disabled had risen to 1,250,000; before the examination, 400,000 of these declared themselves able-bodied and another 300,000 of the re-examined were found to be able-bodied. Socialized recovery and accident stations are breeding-places for malingerers. Socialized medicine is a fine thing—in prosperous times for a community free of laziness, lying and egotism.

The actually sick person becomes prejudiced for numerous reasons: The sick fund physician is always in a hurry; some of them have to handle 40—50 patients in two to three office hours (how many cancers are overlooked!) and visit several dozens in the morning and evening. Payment is bad: about 22 cents for an office consultation, 36 cents for a visit to the patient, of which again after deducting street-car fare, only 22 cents remain. Of course this "big business" of a handful of the chosen allows the vast majority a small number of patients monthly, which makes an income of about $100 a month, as the reader can well judge, impossible. Most of them earn only $40—$60. The sick funds spend for physicians only 12 per cent of the money taken from the insured; that is not more than for their own management; some spend almost as much for the administration, as for the doctors and medicaments. In order to enforce economy and protect themselves from "overhealing" (Überarztung), the sick funds allow only an average of 2½ consultations, 1 visit and 46 cents for medicines per case monthly. Therefore, if the physician has had too many simulants and almost-sick cases (Bagatellefälle) in the current month, he has no more paid-time and paid-medicaments, i.e., time and medicaments which the insurance company covers for serious cases. In times of epidemics a 5—8 per cent increase in the number of consultations and visits is allowed. All this results in mistrust being the leading feature in the relationship of sick fund—physician—patient. In order to protect themselves from the reproach of overhealing, the physicians are forced to turn over to the hospital even patients who could easily be treated at home, viz.: pneumonia, pleurisy, which in turn implies higher costs, but leaves the doctor room for other patients and medicaments. Visits in excess of the prescribed maximum are not paid for by the sick fund, and the difference between the permitted maximum and the actual expenses for medicaments is then deducted from the physician's bill so that the physician is often forced to pay for the drugs of his serious cases. It is therefor clear that only the simplest and cheapest drugs are prescribed. It is also clear that the patient, knowing these conditions, now mistrusts the physician and the efficacy of the prescription, so that the very important psychological factor in the prescription is lost. It is interesting to note that, owing to the above, the sick fund of the civil employees is enabled to earn money on the very sickness of the insured. Since the doctor is not paid for visits in excess of the prescribed minimum, this company, whose form of insurance requires that every patient pay 10 cents to the fund for a consultation, 16 cents for a visit of the doctor, 30 cents for a specialist's consultation, regardless of how often the insured has had to resort to these

in a month, has an income through the deduction of the doctor's fees for plus-visits.

DOCTOR BECOMES POLICEMAN

The physician tends to hold the patient as long as possible, within the limit of the maximum allowed, before sending him to a specialist or an institute. This is only possible with the permission of the chief physician of the sick fund, who protects only the interests of his institution and thus grants as little as possible, even if he has to go against the practitioner's advice—he's a policeman rather than a physician. And as pull generally plays an important role in every institution it is not surprising to hear from general practitioners that they are unable to bring really needy patients to one of the most luxuriant homes of the sick fund or health-resorts. The perennial answer is "all places are occupied."

Almost all sick funds have their own outpatient department for physical therapy, venereal diseases, gynecology, pediatrics, dentistry, etc., where a wholesale treatment is discharged upon the masses of the waiting patients. The corresponding private institute and specialist therefore stand helplessly by with little or nothing to do. Thus we find distress and discontent on the part of the insured and despair on the part of the physicians, whose very existence is endangered. The physicians cannot help themselves, for, in consequence of their pauperization, their social organization is of no value. They have become the Chinese coolies of the sick fund companies, and the most deplorable thing is the relative loss of their reputations and the confidence of their clients. The specialists fare even worse, since they cannot get any patients directly but only on recommendation of the practitioner to the chief physician. A few days ago a renowned Viennese professor told me after his office hours, *"Hodie nemo fuit!"* (no one was here today). I quote only a few figures of the latest schedule to show how poorly they get paid: first consultation, 80 cents; the following ones, 50 cents; appendectomy, $24; treatment of dental root, $1.00; only pathological births are paid for. Not paying for a normal birth induces the physician at times applying such means as forceps, only in order to get a fee. The surgeon only treats minor surgical cases, since major cases are treated free in the hospitals.

Wherever the State goes beyond its natural boundaries, vast disadvantages result for the community.

WHAT OTHERS THINK

Dr. E. Liek says in his book, Der Arzt und seine Sendung (The Physician and His Mission), "Nothing has fanned the embitterment and hatred of the workingman against the State more than the pernicious system of social insurance. The reason is clear: the State takes away one-fifth of his income, in return for which it promises protection in all accidents of life—illness, invalidity, old-age, unemployment, etc.—and cannot keep its promise. An atmosphere impregnated with the mania for pensions and unwillingness to work prevails in the recovery homes and the whole vast imposing edifice of social insurance."

Dr. Wagner, official leader of the German physicians, recommended to the German physicians at a convention the following method for the treatment of dental roots: Put in an arsenic filling and order the patient to come again in a few days. The changes (pains) which result will induce the patient to have the tooth extracted. In this way the treatment of the root, since the sick funds refuse to pay what it really costs, will be avoided.

In Hungary, the united efforts of the physicians, led by the valiant professors of the medical faculty of Budapest, have protected the country from a hypertrophy of socialized medicine.

The U. S. A. has social need, too; there are 14,000,000 unemployed, and responsible men are seeking a cure by introducing this European social hypertrophy. If American physicians think that this system will be of advantage, they are grossly mistaken. Ninety per cent of the Austrian physicians are unable to make a living under it; 400 (10 per cent) Viennese physicians cannot even afford a telephone and have to resort to charity. The socialized insurance did more harm to the physician than the financial crisis.

The American people have trusted the politicians with alcohol control, with its resultant failure and graft. To put the care of the sick under the direction of the state or national politics and their medical puppets would certainly not be advantageous to the patient or the doctor. To trust the care of the sick to corporations for profit where the doctor becomes a chain store clerk under the direction of big business would not help the patient.

If the American people could see what American doctors are seeing in Europe, they would certainly join their forces with those of the doctors to prevent State Medicine in America.

Physicians, guard those possibilities which still enable you to make a living and to give your patient careful, honest attention!

Caveant consules ne quid detrimenti capiat res publica!

MINUTE DEGREE REGIMENTATION OF THE MEDICAL PROFESSION

"FOOTSTEPS ON THE SANDS OF TIME" or the History of America as Communistic Influences Might Write It According to the Joint Resolution to Socialize Medicine Presented in the Senate of the United States on July 28, 1937 by the Senator from Illinois, James Hamilton Lewis.

A succinct setting forth of the law and a summary of the penalties for violations thereof is expressed nowhere so well as in the crime itself as committed by that section of non-American citizens who were influential in causing the Senator from Illinois, James Hamilton Lewis

to introduce into Congress the Joint Resolution reprinted below.

75th Congress, 1st Session S. J. Res. 188

IN THE SENATE OF THE UNITED STATES

July 22 (calendar day, July 28), 1937

JOINT RESOLUTION

To provide medical aid for the needy and the stricken with illness who are unable because of poverty to provide treatment and hospitalization; also to establish all licensed medical practitioners as civil officers of the National Government

WHEREAS the Federal Government has recognized its social responsibilities to its citizens by the enactment of the Social Security Act; and

WHEREAS an extension of such responsibilities is necessary to provide adequate medical care and attention for the impoverished and needy to assure the full enjoyment of social security;

THEREFORE BE IT RESOLVED by the Senate and the House of Representatives of the United States of America in Congress assembled, That all physicians and surgeons who practice the profession of medicine or surgery in the United States or its territories, are hereby declared to be civil officers of the United States for the purposes of this joint resolution.

SEC. 2. Any such physician or surgeon shall render such medical or surgical aid requested of him by any impoverished individual who is in need of such aid, and, where necessary, to order the hospitalization of any such individual. Any hospital to which such an order is directed shall, insofar as its facilities permit, provide for the hospitalization and care of any such individual in the manner best adapted to accomplish his recovery.

SEC. 3. Any physician, surgeon or hospital rendering aid to impoverished individuals as provided in Section 2, are authorized to make such charges for such aid as are reasonable and just. Bills for such charges shall be submitted to the Social Security Board, which is authorized and directed to pay them, under such rules and regulations as it may prescribe.

SEC. 4. (a) It shall be unlawful for any physician, surgeon, or hospital official or employee to refuse to render aid as provided for in this joint resolution, or to make exorbitant or excessive charges for such aid, or to make any charge against an individual to whom aid has been rendered in addition to the charge paid by the Social Security Board.

(b) It shall be unlawful for any person fraudulently to represent that he is impoverished for the purpose of receiving aid under this joint resolution.

(c) Any person violating any of the provisions of this joint resolution shall be deemed guilty of misdemeanor and, upon conviction thereof, shall be fined not more than $1,000.00 or imprisoned not more than three months, or both.

SEC. 5. The Social Security Board shall have power to make such rules and regulations as may be necessary to carry out the provisions of this joint resolution.

SEC. 6. There is hereby authorized to be appropriated such sums as may be necessary to carry out the provisions of this joint resolution.

Note: Under the operation of such a law the liberty and individuality of physicians will be taken away and the doctor will become a small cog in a big political machine.

AN OPEN QUESTION TO MEDICINE AND THE LAYMAN

When science is destroyed by the greed of commerce and the egotism of ignorance, what will happen to humanity, bereft of its most understanding friend—ethical medicine? That day is forecast, for the efforts of societies and lay boards are directed everywhere toward the destruction of the professional status and its replacement by an industrial contract.

The question of a free choice of physician is antagonized and restricted by the insurance administrator of the menacing "state medicine" already at our door, since only those doctors will be chosen, it is understood, who are liberal with certificates of incapacity for work and generous with drugs, since all compulsion insurance schemes lead to expensive over-medication. *German physicians report that the insured patients use ten times as much medicine as the uninsured.*

State medicine, if imported from Europe, as the Crusaders now demand will be state medicine just the same. Its evils will continue for it will not be denatured by merely crossing the Atlantic.

SUGGESTIONS FOR THE CARE OF INFANTILE PARALYSIS CASES

The committee organized by the Chicago Board of Health to outline the proper procedure in the handling of cases of infantile paralysis to prevent crippling insofar as possible, makes the following suggestions and recommendations:

"*Be It Resolved,* that:

Chicago has complete facilities and the medical personnel equal to any in the United States for the proper care of patients with infantile paralysis.

It is not advisable to transport early cases to distant parts of the country by railroad or other means of transportation, because the most important factor in the early treatment is complete rest.

The committee recommends:

1. Complete rest in bed;

2. Immediate support of the paralyzed muscles by proper splints or braces;

3. That the patient be kept warm. This can easily be accomplished by woolen blankets which are kept off the feet by a simple frame;

4. That electrical stimulation be avoided;

5. That massage be avoided;

6. That all unnecessary movements of the limbs and body be avoided;

7. That the patient be not allowed to sit or stand;

8. That parents remain calm in the present situation since paralysis in practically all patients improves very definitely under proper treatment. The improvement may continue steadily for several years, and

9. That all patients, whose aftercare is carried on in their homes, have, when the proper time arrives, the services of a qualified physical therapist, who will work under the direction of a doctor. The Visiting Nurse Association has many nurses who have been especially trained to give these treatments.

CARDIO VASCULAR DISEASE AND VITAMIN DEFICIENCY

S. Weiss and R. W. Wilkinson, Boston, in Annals of Internal Medicine, July, 1937, offer the following information relative to the nature of Cardio-Vascular disturbances:

To determine whether cardiovascular disturbances in nutritional deficiencies exist as a clinical problem, they investigated the records of some 900 patients suffering from various types of nutritional deficiency, including general malnutrition, chronic alcoholism with or without polyneuritis, pellagra, neuritis of pregnancy and diabetes. There were eighty-five cases in which cardiovascular dysfunction of varying severity could not be ascribed to the usual etiologic factors. Because all instances in which organic lesions of the cardiovascular system existed were eliminated and because many of the cases were observed by physicians not experienced in cardiovascular problems, the number selected must be considered minimal. This conclusion is corroborated by the fact that within a period of two years the authors have personally studied thirty-five patients from a total of 5,506 admissions to two general medical services in this hospital. The observations here presented are therefore based on a total group of 120 cases. The cardiovascular disturbances caused by nutritional deficiencies do not form a rigid clinical syndrome. Right and left ventricular failure, arteriolar dilation and increased blood flow, peripheral circulatory collapse and shock, singly or in combination, have been observed. The onset of the disease may be sudden or gradual. Patients with the severe form of the disease show a tendency to fever, to bronchopneumonia and to acute fatal circulatory collapse. Under therapeutic measures such as rest, cardiac drugs, diets rich in vitamin B_1 or crystalline vitamin B_1, all the cardiovascular disturbances usually revert to normal. The clinical symptoms and signs, the blood chemistry, the myocardial changes, the hemodynamics and therapeutic responses correspond to those described in "beriberi heart" in the Orient. The disease as observed in Boston, however, is characterized by more varied and more generalized involvement of the cardiovascular system. Vitamin B_1 deficiency plays a primary part in the precipitation of the disease. Alcohol also is a significant factor, not only because it supplies calories without vitamin B_1 but also because its metabolic effect is similar to that of a pure carbohydrate. The rate of response to vitamin B_1 in "alcoholic" and "nonalcoholic" beriberi varies. The arteriolar system shows a more rapid change than the heart. The cardiovascular disorder usually disappears before the polyneuritis. The condition described bears pertinently on the clinical behavior and the mortality rates of alcoholic and nonalcoholic patients with vitamin B deficiencies (beriberi and pellagra). It may explain the poor reaction of these patients to increases in metabolic rate, such as occur in febrile infections, in hyperthyroidism or under surgical operations.

DEGREE AND PREVALENCE OF VITAMIN A DEFICIENCY IN ADULTS, WITH NOTE ON ITS EXPERIMENTAL PRODUCTION IN HUMAN BEINGS

Vitamin A deficiency is common in adults and varies from a photometrically detectable phase to the complete clinical syndrome. In a group of 162 medical students studied by Harold Jeghers, Boston (*Journal A. M. A.*, Sept. 4, 1937), 35 per cent had low photometer readings and 12 per cent had clinical manifestations of the deficiency. The chief manifestations, in the order of their frequency, were night blindness, photophobia, dry skin, dry conjunctivae, blepharitis and follicular hyperkeratosis. The factors producing the deficiency were analyzed and showed that the skipping of meals and poor choice of foods were chiefly responsible. After dietary analysis it was concluded that 4,000 international units of vitamin A daily represent the minimal requirement for a healthy adult. Infections were more numerous and severe among the deficient students. Further evidence that it is dangerous for the hemeralope to drive an automobile at night was obtained. Photometric evidence of night blindness appeared in six days and subjective evidence in five weeks after the production of a pure vitamin A deficiency in an experimental subject. Night blindness preceded gross epithelial changes.

WHAT HE WAS CALLED

Little Louise was lost and had been brought into the police station. The officers tried in every way to learn her name. Finally one of them said:

"What names does your mother call your father?"

"Why," said Louise, very innocently, "she doesn't call him any names; she likes him."—Association Men.

MEDICAL ECONOMICS

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Edited by the Committee on Medical Economics of the Illinois State Medical Society
E. S. Hamilton, M. D., Chairman
Kankakee, Illinois

R. K. Packard, M. D.
Ralph Peairs, M. D.
C. B. Reed, M. D.
C. S. Skaggs, M. D.
C. E. Wilkinson, M. D.

Address all letters and communications to the Chairman.

Considerable of the time of the last meeting of the Council of the Illinois State Medical Society was spent in discussing the many economic problems of the medical profession. In fact, the majority of the topics under discussion came under this classification.

Naturally, the main interest was in the Resolution introduced in the 75th Congress by Senator J. Hamilton Lewis of Illinois. It is to be hoped that every member of the medical profession in Illinois has read this resolution. There is no excuse for not reading the same as it has been available in practically every medical journal published since its introduction. The concensus of opinion was that the medical profession must assume a more militant attitude than it has in the past, if we are to successfully combat this avowed desire of the New Dealers. Plans are now being worked out by a special Committee as to the exact manner of conducting a campaign of opposition to this plan. Naturally this must consist mainly of an educational campaign for the laity, aided by the doctors assuming the right of every citizen of the United States and taking and showing an interest in politics of the country. With all the members of Congress looking after their fences and preparing for election either this year or two years from now, the time is ripe and the opportunity is present for the medical profession to contact their representatives in Congress personally and tell them in no uncertain terms exactly what they as citizens think of the plan and try to get the Senator or Representative to tell how he stands on the question. This latter is as we all know a difficult thing to accomplish. But surely, we can draw some very definite conclusions as to their stand in the matter and if they are not promising definitely to opposition to any attempts to socialize the practice of medicine, it is our privilege to oppose their reelection, regardless of their alleged political faith. To the medical profession this is not a question of partisan politics, but rather a deeper one striking at the very roots of free government. It makes little difference to the medical profession whether our representatives in Congress are Republican or Democratic, provided they are in opposition to such a plan to socialize the practice of medicine, regardless of how vague and innocuous it may seem when explained by the glib tongue of a professional politician.

The medical profession is receiving great help from non-medical sources and it is but fair that due credit be given where it is due. On August 26, 1937, in the column syndicated by David Lawrence in the *New York Sun,* Mr. Lawrence published one of the finest articles as yet written on this subject. This article will be published in this issue of the JOURNAL either in this column or nearby. All of you please read it and learn what is going on at Washington. There has been no refutation of any of the statements made in his article. Also there will be in this column an article from the *Chicago Journal of Commerce* as of September 4, 1937. The facts stated therein should make every member of the medical profession positive that there is a definite plan at Washington to socialize the practice of medicine. Remember these are not from the pen of medical men, who may be accused of bias and selfishness, but from the pen of the leading writers and commentators of our times, men who do not dare to make false statements, and who know what they are writing about before they start. When they can tell you what is coming in the next few years unless something definite is done at Washington, it is time that the medical profession stop questioning the truth of the few who have dared to make dire forecasts as to the future of the medical profession and join in the fight to preserve the present method of conducting the practice of medicine.

Ever since the little magazine, *Medical Economics,* has been published it has failed to receive the approval of organized medicine. The reason

for this failure is unimportant for what we wish to say here. It enjoys a large circulation and is read by the rank and file of the profession in part or in whole as time permits and as it pleases the reader. The important thing is that it has taken a definite stand in opposition to Socialization of the Practice of Medicine and is opposing it in every way possible for it to do so. The editorial in the September issue probably seems radical to some, but to many it seems appropriate. At any rate the writer is to be congratulated in having some definite plan to oppose said socialization. The Americal Medical Association will be obliged to lead this fight against such legislation as that proposed by Senator Lewis and the sooner they get started the better. They must make the plans of opposition and when relayed to the individuals, they will be carried out. We must not lose valuable time due to disagreement as to who should assume responsibilities.

Among the questions discussed at the last meeting of the Committee on Medical Economics was contract practice as carried on by the different lodges, such as the Eagles and the Moose. A definite conclusion was arrived at and the following day this was concurred in by the Council. A report of this action should be included in this issue of the Journal and should be read by every man in active practice, for in every community some man or men are connected with lodge practice and will be affected by this decision. Also a recommendation was made as to the manner in which premarital examinations should be made and charges for the service rendered handled. This should also be reported in the current issue of the JOURNAL.

A report on the medical service as rendered the wards of the state in State Institutions is in the process of compilation. When this is completed it will be brought to the attention of the proper supervising officers of this department as well as the Governor and it is to be hoped that there will result some changes in the manner in which this service is carried out, since some changes are to be suggested. It is possible that there will be a definite report ready by next month.

The Committee on Syphilis, under Dr. I. H. Neece as Chairman, is working on the problems arising as a result of the greatly increased amount of work required of them since the Premarital Law went into effect and we hope to have a report from them in the next issue.

We fear that there will be so much in this issue of the JOURNAL on economic subjects that it may seem a little topheavy. This is a crucial time for the medical profession and we hope all will read all that is available.

E. S. HAMILTON,
Chairman of Committee.

The following article is copied from CHICAGO JOURNAL OF COMMERCE as of Saturday, September 4, 1937.

HEALTH RISK BILL FAVORED BY NEW DEAL

HOLDS HIGH PLACE ON ADMINISTRATION'S LEGISLATIVE CALENDAR

Washington, Sept. 3.—A health insurance system, rounding out the social securities program which embraces at present only unemployment and old age insurance, holds a high place on the administration's calendar of legislation "futures," it was reported today.

The present plan is to have the health insurance bill introduced by Senator Robert F. Wagner, sponsor of the social security act which setup the unemployment and old age insurance systems. Whether the bill will be offered at the next session or at a latter session has not been decided. The administration, it is said, is not prepared to undertake new financial commitments on a large scale until the budget picture is more favorable but advocates of the measure favor early introduction of the measure as they anticipate that it will stir up such bitter controversy that it might take two or three years to get the bill enacted.

HEALTH INSURANCE VITAL

Senator Wagner believes that health insurance is an integral part of a social security program. He has been studying health insurance plans in force in other countries and has conferred with some government agencies concerned with social welfare. The contemplated plan calls for the appropriation of federal funds to provide free medical and hospital care, but just how this would be provided and what groups of the population would be benefited are details which have not been worked out.

For several months the social security board has been studying some phases of health insurance, but an official of the board said it was not likely that any recommendations to congress at the next session would be made. The view of the board is that until the unemployment and old age insurance systems are completely worked out a study of health insurance must take a secondary place in its activities.

Nevertheless some phases of the question are being studied by a staff working under Ewan Clague, director of the research and statistical division of the board. The study is being made under authority of section 702 of the social security act which authorizes the board to make researches for the information of congress.

Should Senator Wagner introduce a bill next session, it is not likely that the White House would press for

passage until the government's fiscal problem has eased considerably.

5% Wage Tax Needed

Estimates of the cost of a comprehensive health insurance program indicate that a tax equivalent to 5 per cent of payrolls would be necessary to support it. The President's committee on economic security in January, 1935, prepared a tentative plan, but recommended further studies. It found that the cost of wage-loss payments would be 1 to 1¼ per cent of payrolls and also that families with incomes up to $3,000 were spending 4½ per cent of income for medical care.

All the work preliminary to the actual introduction of a health insurance bill is being done quietly and every effort is being made to avoid publicity. The reason for the secrecy is that the administration does not wish to stir up opposition from many groups which regard the plan with hostility. The White House was dismayed when Senator J. Hamilton Lewis of Illinois told a meeting of the American Medical Association at Atlantic City earlier this year that he had been authorized by President Roosevelt to tell the medical profession to reconcile itself to being drafted by the federal government for a federal health insurance plan. He held out the likelihood that all physicians would be federally licensed. The White House did not repudiate Senator Lewis' speech.

TODAY IN WASHINGTON

New Deal Passes from Law and Economics to Tamper with Nation's Health

By David Lawrence

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Washington, Aug. 26.—Physicians throughout the United States will be interested to learn of the New Deal's latest experiment, which may prove the entering wedge for "socialized medicine" in America, sometimes called the placing of medical care on a "quantity production" basis.

Like all New Deal "experiments," the plan to provide medical care by the group method is limited in scope at first. It is to apply for the present to the employees here of the Home Owners Loan Corporation and the Federal Home Loan Bank Board, but it is so set up that it can just as readily be extended to all the 117,000 Federal employees here and the 700,000 or more Government employees throughout the country.

Doctors have long suspected that the New Deal would seek to introduce "socialized medicine," but assurances to the contrary have come as usual from time to time from high quarters. The importance of the new experiment will be minimized in official quarters so as to discourage opposition and the plan will be compared to various group health plans in private industry. But the new organization, nevertheless is directly in line with what has been urged by persons inside the administration who see the job possibilities and patronage potentialities of a medical bureaucracy in the Government. The latest step, therefore, may be taken to mean that the campaign for "socialized medicine" has begun.

The objections to this form of medical care are numerous and the best testimony is that which comes from experts who have studied the health insurance system abroad.

Thus, Sir E. Farquhar Buzzard, president of the British Medical Association, said recently in a public address.

"The chief flaw in a badly organized service, such as that which has evolved in this country during the last century, is lack of time, and both the general practitioner and the consultant, in order to earn a living wage, are frequently obliged to undertake far more work than they can deal with efficiently in the hours at their disposal."

Regarding Germany, Dr. Paul G. Frank, another authority, says: "For almost thirty years I have worked as a German panel doctor under the conditions of compulsory health insurance, and for many years I was a member of the physicians committee. During this period I witnessed a deterioration of the medical profession. It came about by the removal of the sanctions of preferment by skill and the substitution of preferment to convenience."

The same line of reasoning is expressed by Dr. William J. Mayo of the Mayo Brothers Clinic in Minnesota, who wrote recently:

"We of the medical profession are determined that we will not be subjected to political interference. We will not sacrifice the spiritual values of our profession for the small material gain held out to us by political and social experimenters who are attempting now to control the practice of medicine. We refuse to be dictated to by men who are not physicians, who do not understand the sacred obligation of physicians and their patients."

The way "socialized medicine" would develop would be to discourage younger men from going into the medical profession and take away from those who have built up a practice many of the patients who ordinarily come to them.

It is true a large number of doctors would have to be employed by the Government in any national scheme of "socialized medicine," but the selection of these doctors by a political spoils system would only be a worse step than the application for Government jobs of doctors not good enough to build for themselves a firm reputation and adequate practice in their own communities. If, for instance, all Government employees in Washington were to be cared for medically under some sort of group plan run by the Government, why should any good doctors stay here? Why should any new ones come here from the best medical schools to replace those who are retiring? Immediately there would be a destruction of incentive and a breakdown in the quality of medical care available to the people of this whole community.

The new plan to be put into effect next month by "The Group Health Association" among the Home Loan Corporation employees calls for payments of $3.30 a month for men with families and $2.20 a month for single persons.

"The service," it is promised by one of the officials in charge, "will include medical and surgical examina-

tions, including examination in special departments, such as eye examinations, laboratory tests and X-ray examinations. In each case, complete medical and surgical care will be given.

"Hospitalization is to be given in a semi-private room for a period of three weeks during a single illness, without additional charge."

The staff of the new clinic is to be headed by Dr. Henry R. Brown of the tuberculosis division of the Veterans Administration and it is planned to hire a staff of about six or seven physicians.

The charter of the new organization is not restricted to the employees of the Federal Home Loan Bank Board and Home Owners Loan Corporation who are to participate in the group health scheme, but, if successful, the project can be extended to all Government employees inside and outside of the national capital. The dues do not include cost of medicines, drugs and surgical appliances nor the expense of dental work, oxygen tanks, radium and deep X-ray treatments, blood transfusions or special nursing service. It is not planned to treat certain types of surgical or nervous disorder cases or to furnish treatment after the medical director recommends confinement in an institution in mental, tubercular, drug or alcohol addiction cases.

The whole experiment, however, beginning now on a small scale, dovetails with reports current last November *that the Social Security Board was studying the* possibility of adding a national health insurance project *as a part of its program. Comprehensive health insurance,* of course, would be borne by the taxpayers and *it is estimated as likely to cost 5 percent of payrolls.* The Social Security Board has authority to make research studies on "related subjects" and health insurance is held to be one of these.

The New Dealers are seeking to pattern their plans on projects in foreign countries, but prominent American physicians, like Dr. Floyd S. Winslow, president of the Medical Society of the State of New York, says of the experiences of the Europeans:

"*Many physicians are required to see forty to sixty* patients a day—some average 100. This is far too *many. Why do not British doctors complain?* It should be remembered that health insurance has existed as part of the Government in England since 1911. British physicians who see its great defects are 'cagey' in their public statements derogatory of a system in which so many physicians and bureaucrats are dependent."

Dr. Winslow also quotes Dr. Jacob L. Moreno, who is an authority on the Austrian experience, as saying:

"*No physician is capable of properly treating the* large number of patients sent him under sickness insurance. He is forced to evolve some mass production plan of operating his office to run people through *his mill as fast as possible. The 'rush' system of han*dling patients is inevitable. When the technic of get*ting them in and out fast is perfected, the doctor begins* to lose that intangible something which is vital to both himself *and his patients—his morale. I do not know any doctor who remained long at this sort of* practice in Austria who did not become hardened."

The New Deal *has not hesitated to tamper with the* economic system, to tamper with the judicial system, and now is reaching out to tamper with the health system of the country. Inasmuch as the Roosevelt administration has encouraged a group of office-holding lawyers to seek to undermine the American Bar Association, it would not be surprising, therefore, if the administration, in order to make some sort of showing of approval by members of the medical profession, encouraged the formation of a rival to the American Medical Association to be made up either of doctors ambitious for jobs, or doctors who haven't made good in their communities, who do not have the gumption or initiative to undertake the hazards of private practice, and who prefer instead the "security" of politically made and bureaucratic jobs. America's death rate, if the Southern States where large Negro populations live are eliminated, will be found to be lower than that of any of the countries where Government insurance schemes prevail. Likewise four of the leading countries which have the lowest death rates do not have compulsory health insurance. They are Australia, Union of South Africa, New Zealand and Canada. In South America, Chile, which has compulsory health insurance, has a death rate of 26 per thousand inhabitants every year, while *Argentine has 11 per thousand and Uruguay 10 per* thousand, and neither of these last two countries has a *Government insurance system.*

Reprinted from David Lawrence's Syndicated column in the New York Sun, August 26, 1937, for the Public Relations Bureau, Medical Society of the State of New York, 2 East 103d Street, New York, N. Y.

Correspondence

A POSITIVE SOLUTION OF THE SEX PROBLEM

Savannah, Illinois,
September 10, 1937.

To the Editor:

Enclosed is a copy of a letter to the President which I will appreciate if you will publish. I believe it is worth while.

N. GENEVIEVE CHIPMAN, M. D.

Savannah, Illinois,
September 9, 1937.

Hon. Franklin D. Roosevelt,
President, United States of America,
Washington, D. C.

Honorable President:

The daily headlines in our newspapers of "murder," rape and sex crime against women and small children is appalling in *"these days of supposed civilization" and to think, the one step,* to suppress this crime, has not as yet been taken.

It seems unbelievable the solution is still in

abeyance when it is so simple, so perfect, with so little cost or injury to the individuals.

In order to recover from a disease, we must first ascertain the cause, remove it, and in this *case we know the cause and removal of the cause* will bring about complete recovery.

This I believe is good reasoning, for why preserve an organ in the body when that offending organ is making a desperate criminal of the individual? Better by far remove or treat the organ and make a good citizen in preference to *a life of incarceration in a public institution for* tax payers to maintain.

I suggest a "National law" making it compulsory in every state in the Union in which the *law is not already in force, and that law is, "sterilization"* of the criminally insane and mental defectives, criminals and particularly "murderers," and sex criminals, for sex criminals are insane along one line only and that is sex gratification.

Illinois has recently inaugurated a state wide *campaign to eliminate syphilis and gonorrhea,* also a law compelling young people anticipating *marriage to obtain a certificate of health. These* are both wonderful laws and the state needs to be congratulated, but Illinois needs one more law equally as magnanimous and would place this state among the first of the nation in eliminating the cause of murder, rape and sex crime against women and small children. This law *is sterilization of all morons, sex criminals,* "murderers," mental defectives and insane, and any others dangerous to society. This law would also in time eliminate the tremendous cost to tax payers for maintenance of institutions of public welfare to house these individuals. The law should also include subnormal individuals "who never work" but "multiply" and for generations are parasites on a community for their welfare. These individuals in each community should be sought and a process of sterilization begun, to improve the next generation, for, "believe it or not," these same people are the *"progenitors"* of our *"next race"* of people.

Can the nation or state overlook this stupendous task and still let the curse proceed without intervention? You all well know how "docile" the *"night howling* tom cat" becomes after sterilization; try it on morons and sex criminals and see what good citizens can be made, in preference to a life of incarceration in a public institution and expense to already *"overburdened tax* payers."

And before closing may I suggest another solution that will relieve the sex problem, and that *is a dress reform that will* cover the bodies of men, women and children, and be an example for the next generation to practice modesty, morals and decency.

"The lust of the flesh" is ever present in a nude, or practically nude body. Keep it covered and we will have less "sex appeal" and "abuse"; *"more brains" with higher standards.*

May I suggest a bill for "National Sterilization" *of criminals, particularly murderers and* sex criminals, mental defectives and those who *for generations have been parasites on communities,* be inaugurated and placed before the next session of the Congress.

321 Main St.

N. Genevieve Chipman, M. D.

QUESTIONS THE LEGALITY OF THE VERTICAL HOSPITAL STRIKE

CHICAGO HOSPITAL COUNCIL

Chicago, Sept. 22, 1937.

To the Editor: We are attaching herewith a copy of a letter sent to the Honorable Barnet Hodes, Corporation Counsel, regarding the legality of the vertical hospital strike in this community.

We believe the issue presented therein would be of sufficient importance to the medical profession to warrant the publication of this attached letter in your JOURNAL.

Arnold F. Emch, Executive Director.

The letter to Mr. Hodes follows:

CHICAGO HOSPITAL COUNCIL
105 West Adams Street
Franklin 9292

September 18, 1937.

The following self-explanatory letter was sent to the Hon. Barnet Hodes, Corporation Counsel, today. We believe it will warrant your careful consideration.

"Hon. Barnet Hodes,
Corporation Counsel,
Room 511, City Hall,
Chicago, Illinois.
Dear Mr. Hodes:

Inasmuch as the United Hospital Workers of Chicago (a C. I. O. affiliate) has announced

at one of its recent public meetings that the offices of the Mayor and the Health Commissioner had assured its representatives that hospital employees had a right to strike, we were obligated to communicate with Mayor Edward J. Kelly and Dr. Herman N. Bundesen to determine whether this announcement had any basis in fact. We are pleased to say that both the Mayor and the Health Commissioner have since informed us that they did not at any time advise the representatives of this Union that they did, or did not, have a right to strike (since this is a matter upon which the Corporation Counsel must decide).

It is for this reason that we are now communicating with you in the hope that we may receive your counsel and advice regarding the legal status of a vertical hospital strike in this community.

We do not ask that the city take any official stand toward or work out the strictly employer-employee problem of wages, hours and working conditions in hospitals, but we do believe that the possibility of vertical strikes in voluntary, not-for-profit hospitals, involving the non-professional employees in hospitals, should be a matter of concern to the Mayor, the Health Commissioner and the Corporation Counsel.

We believe that the legality of such vertical strikes should be investigated by your office, since the dangers to the community involved in such a strike would be even more serious than those involved in a strike of the police or fire departments of this city.

Since the operation of a hospital in the community affects the public welfare, lives, well-being and health of the people, we believe that such an institution should not have its proper function interfered with by strikes—since chaos would result and the public health and welfare would be materially affected. Uninterrupted hospital services for the people of this city is so vital for the preservation of the general health of the community, especially the children, the sick, and the infirm, that any organized effort to interfere therewith should be regarded, we believe, as an act of hostility to the common good.

Whatever may be the right or the wrong of the present wage and hour controversy, the health of the community must not be made subservient thereto. Acts which would not be unlawful under ordinary conditions become unlawful, we believe, when linked with a purpose inimical to the welfare of the community.

Hospitals are making a valiant effort to adjust hours and wages so that no hospital employee is underpaid or overworked. This must, however, be accomplished if possible without increasing the cost of hospital services to the public.

For your information, record and convenience, we are enclosing a copy of a recent confidential survey completed by this office, and we sincerely hope that you will be able to advise us at a very early date what, in your expert and professional opinion, is the legal status of a vertical hospital strike in this community.

Arnold F. Emch, Eexecutive Director."

REGULATIONS RELATIVE TO RELEASE OF CASES OF TYPHOID FEVER THAT HAVE BEEN HOSPITALIZED

It has come to our attention rather frequently in the past few weeks that there seems to be a lack of familiarity of physicians and hospitals in regard to the release of cases of typhoid and paratyphoid fever that have been hospitalized, with the result that in many cases the burden of unnecessary expense is placed upon the patient or the family of the patient.

Any case of typhoid or paratyphoid that has been hospitalized, and in the opinion of the attending physician is convalescing, and if in the opinion of the physician, the physical status of the patient will permit his removal to his home, such cases may be removed to the home pending the period in which release specimens are to be secured. Before the case is removed to the home, however, the hospital should notify and obtain permission of the local health officer of the community in which the case is hospitalized and also the health officer of the community to which the case is to be removed. Also this Department should be informed that such removal is planned, the date that the removal will take place and the patient's address.

Cases should not be removed to the home unless the inmates of the residence have been inoculated with the customary three doses of typhoid vaccine. If a food handler exists in the family and the case is removed to the home, the food handler will be required to live elsewhere and take his meals elsewhere until final release of the case is obtained, otherwise he will be quar-

antined on the premises until the quarantine of the case is terminated.

When a case of typhoid or paratyphoid fever is removed from a hospital to the home for final release, the residence should be placarded with the customary typhoid fever sign and such sign shall remain until two specimens of feces and urine taken one week apart, the first not sooner than ten days after the case is afebrile, prove to be negative for the typhoid bacillus.

Yours very truly,
Frank J. Jirka, M. D.,
Director of Public ealth.

EDUCATIONAL COMMITTEE

A Change in Outlook

DO YOU KNOW—

That the ancient Greeks whose love of beauty became almost a religion regarded the cripple with disgust and aversion? The ancient Egyptians were cruel with regard to the cripple, even purposely deforming children to sell as slaves. Among the Romans the practice of destroying deformed infants was common until the Emperor Valentinian forbade it by law in 374 A. D. Even among the Jews who took a forward step in humanity, the cripple was barred from the priesthood, by the law of Moses, "One who is crooked footed, or crook backed or broken handed can not serve as a priest." In the middle ages the cripple was either despised or feared. Shakespeare indicated the feeling by usually having the villian a deformed person.

DO YOU KNOW—

That now the crippled child is the object of special attention? Expert surgical and medical care are available for him. Special schools are established where the crippled children receive their instruction as well as necessary corrective treatment at the same time. This change certainly marks an advance in general humanity. Our modern civilization may not be perfect but its treatment of the crippled looms large on the credit side.

DO YOU KNOW—

That 80% of crippling occurs before the child is even ready for school and much can be done for this youngest group? Some of the most valuable procedures in relieving the crippled much be postponed to later ages but the time spent in waiting need need not be wasted if the cases are seen early. Infantile paralysis stands out as the chief producer of crippling. Medical scientists are working on preventives of this disease and it may not be many years before some other glorious achievement will stand with the well established preventives of diphtheria and smallpox. The story of the crippled child is by no means finished. Much is to be done. Cripples have made valuable contributions to the world of Arts, Letters and Science—Sir Walter Scott, Lord Byron and Steinmetz.

This is the type of article going weekly to 85 newspapers, 334 organizations such as libraries, and individuals.

The Second Annual Meeting of The Illinois State Society of X-Ray Technicians will be held in Bloomington, Illinois, on Oct. 23, 1937, at Hotel Illinois. Morning and afternoon sessions. Banquet dinner and entertainment in the evening.

Edith B. Dawdy, R. T., President.
Esther C. Perry, R. T., General Chairman.

WOMAN'S AUXILIARY TO THE ILLINOIS STATE MEDICAL SOCIETY

A Message from the President

MRS. HERBERT B. HENKEL

A new year dawns in the activities of the Woman's Auxiliary to the Illinois State Medical Society, a year which we fondly hope may be rich in service and worthy of recollection in the annals of the organization.

At the outset, may I extend hearty greetings to all officers, and members of the Auxiliary, as well as to all Doctors' wives and others in any way affiliated with the medical profession of the State.

The most cursory consideration of the Auxiliary's work in this State reveals many and varied opportunities for service. And as we look back upon the record of previous years, it gives us a feeling of pride and satisfaction that so much worth while has been accomplished, so much of progress has been achieved, and it inspires us to even greater effort in our program of work.

In every such program the legislative phase deserves an important place. It so happens that this is one of the "off years" in the legislative sessions, but that gives us the advantage of more time than usual to acquaint ourselves with all bills pending which concern the welfare of the profession, and be ready to go into action when they come up again. "State Medicine," for example, is an issue which requires our most thorough study if our interests are to be protected as they should be.

On this subject, in particular, it is vitally important that we secure speakers who are informed as well as eloquent, who are available at all times to present our cause to the laity. Every Augiliary member and every Doctor's wife should realize the importance of this issue. Now is the time when we can be of real service and we must not shirk the opportunity.

Another highly significant opportunity for our service as an organization is the imparting of the profession's ideals and aspirations to the laity of our sex. Laity Day programs enable us to do this very effectively, but it should be borne in mind that an isolated program of this type, here and there, falls short of the required results. There should be at least three or more of these programs.

It is my suggestion that every Auxiliary arrange for a series of such events, for experience has shown that the public is interested in them and in many instances has asked for more.

And while on the subject of programs, I might add that they should be kept interesting and informative,

and never dry and abstruse. The social phase should be judiciously combined with the programs themselves, for we must not neglect those features of hospitality and acquaintanceship which means so much to any organization like ours. Then, too, let's not forget to arrange occasional get-togethers with our husbands in the profession, and spread the gospel of good fellowship in that field as well.

The general program committee has worked out some splendid suggestions for these programs. Those outlines are for your benefit and will be found extremely helpful in arranging the work of the year. You are not expected to follow them to the letter, but many times they will save you time and thought in emergencies. You will also find references to *Hygeia* throughout the suggestions, and its frequent use is recommended because of the very interesting and constructive material it contains along these lines.

It is appropriate at this time, as we approach the work of the new year, to stress the importance of every Auxiliary chairman enlisting the aid and co-operation of, and working with, the State Chairman, upon whose shoulders rests a heavy burden of responsibility which is often not fully appreciated.

We should early learn to cultivate them and to seek out the many and worthwhile ideas they have to offer. And on the other hand we should be generous in our contributions to the good cause. Every Auxiliary can suggest something for the good of the order which will make it bigger and better in all its essential undertakings. It is, if you please, a game of "Give and Take," in which all should join in the common bonds of service and good fellowship.

In conclusion, may I wish every Auxiliary a happy and prosperous year. It is my sincere hope that you may accomplish all that you have set out to do, and my constant wish that we all may "Become more Auxiliary minded."

MRS. HERBERT B. HENKEL,
President.

COUNTY NEWS ITEMS

St. Clair: Mrs. C. C. Winning, past president of St. Clair county, and State Program Chairman with her committee consisting of: Mrs. Lucius Cole, River Fort, Ill.; Mrs. H. H. Hurd, East St. Louis, Ill.; Mrs. Herbert Henkel, Springfield, have prepared an interesting and enjoyable program for the coming year. Mrs. R. F. Stanton is the able and capable president this group chose for a leader.

Bureau: Mrs. R. E. Davies, Retiring President; Mrs. M. A. Nix, 1937-38 President.

Coles-Cumberland: Mrs. Harned, President.

Cook: Mrs. H. J. Dooley, president. Cook County is planning the best year ever in membership and constructive work activities.

Douglas: Mrs. F. C. Phillips, President.

Kane: Mrs. E. M. Thomas, Past President; Mrs. C. A. Potter, 1937-38 President.

Knox: Mrs. Chas. A. Ross, President.

Livingston: Mrs. J. G. Young, President.

Sangamon: Mrs. S. R. Magill, President.

Vermilion: Mrs. A. O. Sistler, Past President; Mrs. I. J. Scott, 1937-38 President.

Three new groups were organized the past year:

Adams—Mrs. Walter Stevenson, Quincy, President.

La Salle—Mrs. A. I. Raminossky, President.

Montgomery—Mrs. E. T. Douglas, Hillsboro, President.

Illinois was well represented this year at the National Convention. The following Illinois State members have places on the National Board:

Mrs. Lucius Cole, Second Vice-President.

Mrs. J. P. Simonds, Editor-in-Chief of the News Letter for the Woman's Auxiliary to the American Medical Association.

Mrs. Rollo K. Packard, Director.

The State Convention, held in Peoria late in May, was the largest ever held. There were twelve hundred Doctors and three hundred Auxiliary members and guests present. An enjoyable time was had by all and Mrs. Milo Eastman, Convention Chairman, is to be congratulated again even at this late date.

LOUISE W. SMITH (Mrs. C. Otis)
Chairman Press and Publicity.

MAYO FOUNDATION FALL CLINIC

A special program of lectures and demonstrations in surgery and medicine will be held under the direction of the Mayo Foundation from November 8 to 12, inclusive. Mornings will be devoted to surgical and medical clinics. In the afternoons and evenings, in addition to a clinico-pathologic conference, symposiums will be conducted on gastro-enterology, allergy, diseases of the chest and cardio-vascular diseases. Visiting physicians are invited to attend.

POLIOMYELITIS AND OTHER DISEASE PREVALENCE

Illinois Health Messenger, September 15, 1937, states that:

Infantile paralysis is more prevalent than at any previous time so far as revealed by official records. Up through September ninth, 411 cases had been reported this year against 161 in the corresponding period of 1936, an epidemic year that brought 682, the third highest on record. So far the prevalence trend this year has conformed exactly with previous behavior, beginning to rise noticeably late in July and climbing rapidly since the first of August. This behavior suggests that a high prevalence level will continue for two or three weeks since the peak of epidemic waves in the past has occurred late in September or in October.

Even under epidemic conditions as now prevail, however, the risk of illness to any particular child is not great compared with the danger of illness from diphtheria, scarlet fever or pneumonia or injury from accidents.

Presuming that 1,200 cases of poliomyelitis will have occurred by the end of the year, it will have affected about 1 in each 1,600 children under fifteen years of age. Last year about 1 in each 1,000 children of the same age group suffered from diphtheria and scarlet fever attacked about 1 in each 100. The accident rate is unknown but accidental mortality indicates a relatively high incidence.

This is not said to minimize in any sense the serious-

ness of poliomyelitis or the importance of utilizing every possible means of controlling the disease. From one-half to three-fourths of the patients who suffer acute illness from poliomyelitis are left physically handicapped in varying degree. This result is more characteristic of infantile paralysis than of any other common communicable disease.

Since there is available no specific method of prevention that can be applied practically on a large scale, treatment of patients so as to prevent paralysis if possible and to cause the best recovery of those paralyzed assumes dominant importance. Convalescents' serum is recommended for treatment of patients prior to the onset of paralysis and even in the early stages after paralytic symptoms appear. Experience last year in Illinois indicates that convalescents' serum is effective in preventing paralysis.

Good orthopedic care is of paramount importance from the very moment after the onset of paralysis. Recovery is slow in most cases, requiring regular treatment over a long period, two or three years. Ultimate results under competent medical advice, however, make the expense and effort in treatment of inestimable value to the patient.

Convalescents' serum is distributed free by the State Department of Public Health and may be had promptly through the district health superintendents located at various points throughout the State or from the laboratory at Springfield. Medical consulation service is available from the State Department of Public Health and from the division for handicapped children of the State Department of Public Welfare.

Although concentrated principally in Chicago, prevalence of infantile paralysis has been and is general throughout Illinois as well as in several neighboring States. Of the 411 cases reported up to September ninth, 210 were in Chicago.

EXAMINATIONS AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next examinations (written and review of case histories) for Group B candidates will be held in various cities of the United States and Canada on Saturday, November 6, 1937, and Saturday, February 6, 1938. Application for admission to these examinations must be filed on an official application form in the office of the Secretary at least sixty days prior to these dates.

The general oral, clinical and pathological examinations for all candidates (Groups A and B) will be conducted by the entire Board, meeting in San Francisco, California, on June 13 and 14, 1938, immediately prior to the meeting of the American Medical Association.

Application for admission to Group A examinations must be on file in the Secretary's Office before April 1, 1938.

For further information and application blanks address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6) Pa.

ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES

The Pacific Fleet will be in the port of Los Angeles during the Convention of the Association of Military Surgeons on October 14-16, 1937, at the Ambassador Hotel. An unusually interesting program has been prepared and the Scientific and Technical Exhibits will be the largest in the history of the organization. Physicians, Surgeons, Dentists and Veterinarians of the Army, Navy, Marine Corps, C. C. C. Camps and the Veterans Administration will be present. For additional information write to Robert L. Lewin, Ambassador Hotel, Los Angeles, California.

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS

The first West Coast meeting of the American Academy of Orthopaedic Surgeons will be held on January 16-20, 1938, at the Hotel Biltmore, Los Angeles. Special trains will be run with stop-overs at Santa Fe, the Grand Canyon, San Francisco and other points. For further information write to Robert L. Lewin, Hotel Biltmore, Los Angeles, California.

CHICAGO UROLOGICAL SOCIETY

The regular meeting of the Chicago Urological Society will be held on Thursday, October 21, 1937, at the Palmer House, 8 P. M.

The Ninth Annual William T. Belfield Lecture will be delivered by Dr. D. K. Rose, St. Louis, Mo. His subject will be "Neurologic Anatomy and Physiology of the Bladder and its Clinical Application in Urology."

Preceding the meeting there will be a dinner at 6:30 P. M. to honor Dr. Rose.

WILLIAM J. BAKER,
Secretary

REMOVING ADHESIVE PLASTER

For the painless and most satisfactory removal of adhesive plaster, it should be thoroughly moistened with "KARITH CLEANING FLUID." Karith Cleaning Fluid is quick and effective. It does not contain carbon tetrachloride. Its use is not acompanied by the odor or unpleasantness and danger common to carbon tetrachloride type products.

Karith Cleaning Fluid is manufactured by Karith Chemical Company of Chicago, Illinois, and is carried by drug stores.—J. W. W., Ill. Med. Jour., Nov., 1936.

Menorrhagia due to excess of estrin in the blood may be treated with thyroid extract. If there is also pain, Antuitrin-S given just before the menses may be of striking benefit. Evan. Shute, *Canad. M. A. J.* 35:622 (Dec.) 1936.

Peritoneal immunization favorably influences mortality and morbidity of post-operative peritonitis. Bargen's vaccine is one of the most effective and suitable activating agents. Herbert Lester Johnson, *Am. J. Surg.* 34:266 (Nov.) 1936.

Original Articles

MODERN PROBLEMS IN THE CONTROL OF STREPTOCOCCIC DISEASES

JOHN HAYS BAILEY, Ph. D.
CHICAGO

The streptococcic diseases, scarlet fever, erysipelas, puerperal sepsis and hemolytic streptococcic sore throat, present the most complex and perplexing problems in public health today. While diphtheria and typhoid fever have been controlled to all but the vanishing point and well proven means to accomplish this are at hand, the streptococcic diseases continue to kill and handicap the population as they did twenty years ago. There is evidence that scarlet fever, at least, is increasing in prevalence, although the mortality rate has remained practically constant. The average mortality from scarlet fever in Illinois for the years 1928 to 1935, inclusive, was 3.8. During the triennium 1933-35, however, the average annual rate rose to 4.2 per 100,000. Average mortality rates for certain of the contagious diseases for the same years are shown in Figure 1. The scarlet fever mortality rate leads all others, being 1.7 times higher than whooping cough or measles, and just twice that of diphtheria. It is ten and one-half times greater than that of poliomyelitis.

If we consider the reported incidence of scarlet fever for the same period (1933-35) we find an average yearly incidence of 26,267 reported cases or approximately 300 cases per 100,000 population. During this period the incidence of reported cases rose from 16,000 in 1933 to over twice that number in 1935. These data show the magnitude of the problem.

Stallybrass has said that epidemiology is a study of the seed, the sower, and the soil. In the case of the streptococcic diseases the soil is the entire population. In infancy and old age the seed produces erysipelas; in early childhood and adult life it blossoms as scarlet fever, sore throats and puerperal sepsis. This is shown in part in Figures 2 and 3. Thus this seed produces a harvest from all soil in which it may be sown.

It is about the seed that much scientific discussion has centered—and many of the difficulties in control are direct offshoots of these discussions. The concept that each disease is caused by a particular and distinctive hemolytic streptococcus had its origin in the discovery of the hemolytic streptococcus in a variety of conditions, each organism being named for the disease from which it was isolated. The hypothesis

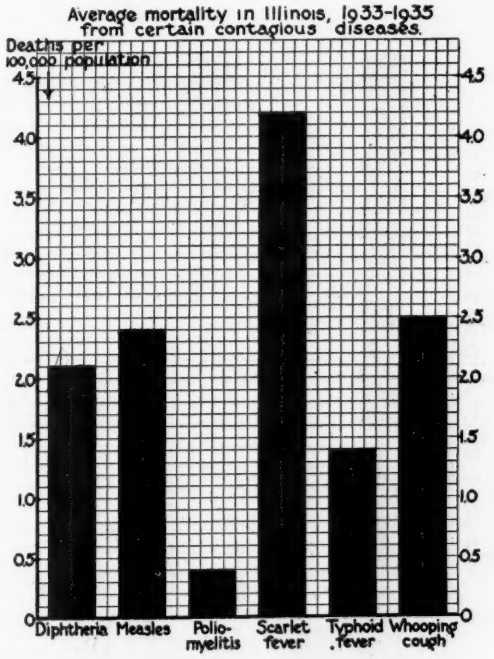

Figure 1.

that specific streptococci caused specific diseases continued unchallenged until the work of Dick and Dick and Dochez. Since then, evidence is gradually accumulating that there is a lack of specificity in the hemolytic streptococci and any one may cause a variety of conditions. In 5% of some 200 scarlet fever cases, the causative organism was found to be a hemolytic streptococcus frequently causing erysipelas. This same type of organism was originally isolated from a case of puerperal sepsis. Certain hemolytic streptococci are frequently encountered in scarlet fever and certain others in erysipelas, but the former may cause erysipelas just as the latter may cause scarlet fever.

The Chicago Branch Laboratory, Illinois Department of Public Health and the Department of Bacteriology and Public Health, University of Illinois College of Medicine.

Read before Section on Public Health and Hygiene, Illinois State Medical Society at Peoria, May 19, 1937.

From the bacteriological data presented, it is apparent that any one of a number of streptococcic diseases may be transmitted by a single individual who harbors hemolytic streptococci. Thus a case of scarlet fever may give rise to erysipelas in one individual, sore throat in another, and puerperal sepsis is still another.

Control of the case by quarantine and isolation has been the method of control of the streptococcic diseases. From the figures already given it is apparent that control of the case by this method has failed to prevent the spread of scarlet fever. The data on the other streptococcic diseases are incomplete.

Any quarantine exerts a considerable hardship upon the household, both economically and in restriction of personal rights. If the case be not acutely ill during most of the quarantine period, a feeling of disrespect for the restrictions, a sense of futility, is engendered. This is more pronounced in long quarantine periods. Recognition of these facts and the low fatality in present-day scarlet fever led to agitation for reduction in the quarantine period. In 1932 the Illinois Department of Public Health, with several other states, reduced the quarantine time for scarlet fever from four to three weeks. Some of the results of this move have been mentioned above. This is shown graphically in Figure 4. One of the claims advanced for the shortening of quarantine was a reduction in economic loss through time spent in quarantine. Arbitrary shortening of the quarantine period, however, does not necessarily result in an economic saving. During the triennium 1930-1932, under a four-week quarantine rule, 1,350,000 days were lost by cases alone. During 1933-35, when the three-week quarantine was in effect, the time lost by cases alone amounted to 1,500,000 days. This is an increase of 11% in the time lost. (Figure 5.)

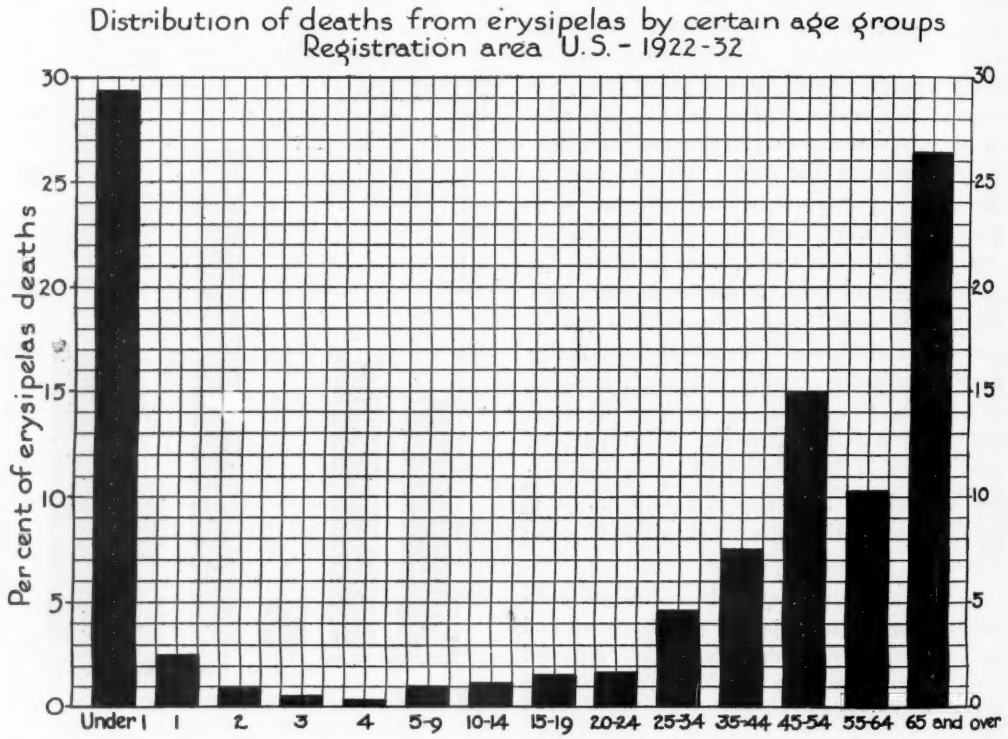

Figure 2.

A partial explanation for this increase is not difficult to find and is dependent upon the length of time scarlet fever patients harbor hemolytic streptococci. One thousand scarlet fever patients were examined culturally at the end of their three-week quarantine. Of this number

87% harbored hemolytic streptococci. A similar study by Hoyne[1] showed that only 60% of the patients were vectors of hemolytic streptococci at the end of the four-week quarantine. If these figures hold for the state at large, during the triennium 1930-32, when there was a four-week quarantine, an average of 9,800 foci of infection per year were returned to the population. In the next three years, 1933-35, a yearly average of 22,000 foci of infection were sown among the population.

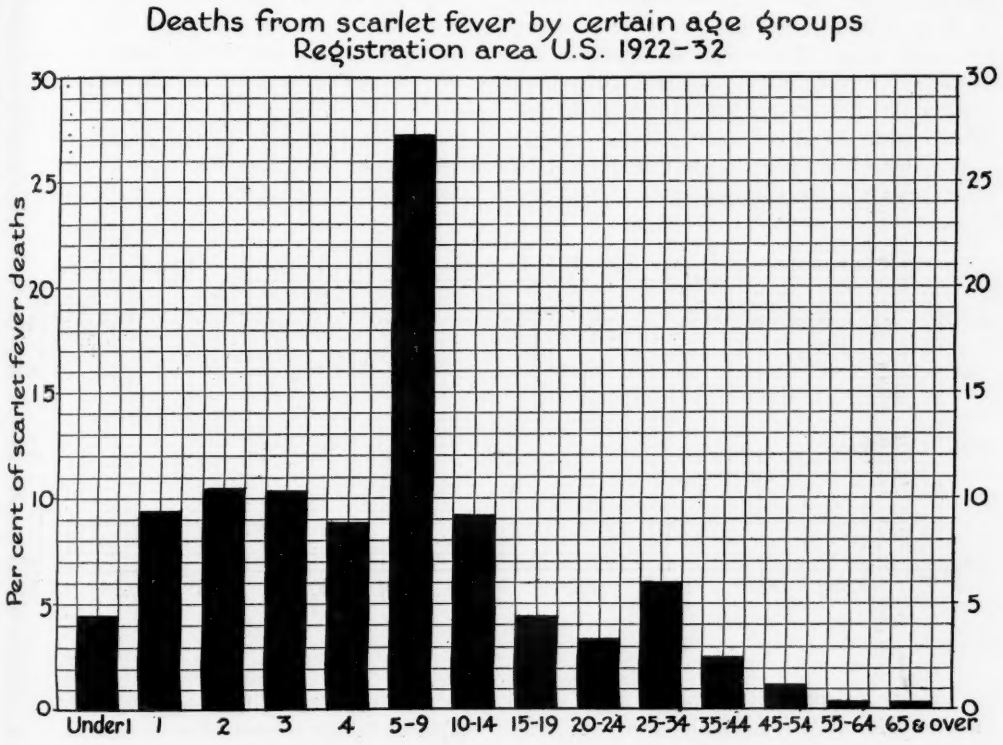

Figure 3.

Illinois has gone back to the four-week quarantine period, but will this alone solve the problem? A rational quarantine rule for scarlet fever would base the release from quarantine upon negative cultures for hemolytic streptococci following clinical recovery of the case.

An objection to this plan is that a long time frequently elapses before cultures become negative for hemolytic streptococci. It is impossible to predict how much the quarantine period would be lengthened by requiring negative cultures. The same principle, however, determines the release from quarantine in diphtheria and typhoid fever. Hardship would be exerted upon certain individuals, but would the end results justify the procedure? Hoyne[2] has shown that with a three-week quarantine period 7% of hospitalized cases of scarlet fever gave rise to return cases. With a four-week period, 4.3% of the discharged patients transmitted scarlet fever after returning home. When negative cultures were required for release, this rate fell to 2.9%. Lucchesi[3] stated that in Philadelphia quarantine is maintained for 30 days, and he believes that the low return-case rate of about 3% is due to the longer quarantine period.

The long residence in a contagious disease hospital that this plan would involve would tax the capacity of hospitals and prevent hospitalization of acutely ill patients due to lack of room. It is possible that with a longer quarantine period fewer cases would occur and the present hospital capacity would be adequate. Furthermore, 75% of the cases of scarlet fever are cared for in the home and it is estimated that only one quarter

of those admitted to hospitals are in need of hospitalization.

It is a widely accepted belief that the hemolytic streptococcus is an almost universal inhabitant of the normal human nasopharynx; the literature contains few adequately controlled studies on this question. To refute the view that most people carry hemolytic streptococci the following may be cited: Nearly all authors have taken patients in the dispensaries of hospitals as normal individuals, or hospital attendants and nurses. The former are hardly normal or they would not have applied at the dispensary and the latter, as Seifert points out, are in close contact with the ill and may easily become carriers. Bourn[4] and her associates studying 1,460 individuals, medical students and out patients of the surgery and pediatrics departments of Johns Hopkins Hospital, found only 10.4% of 2,812 cultures positive for hemolytic streptococci. The age group under 10 years showed the highest percentage of positive cultures, with a decline as the age increased.

In a survey of grammar school children in Illinois still in progress, 1,300 grammar school children have been cultured, of whom 284 were found to be carriers of hemolytic streptococci. Since these are the younger children, the incidence would be expected to be higher than in the general population.

While it is true that the hemolytic streptococcus is widely distributed in the population, a majority of individuals do not carry this organism and, furthermore, the older age groups are unimportant as vectors.

Release from quarantine on negative cultures is further objected to because of the inability, without tedious laboratory procedure, to determine whether or not a given streptococcus can cause scarlet fever. In a recent survey made in Illinois it has been shown that 90% of the carriers of hemolytic streptococci harbored types frequently causing scarlet fever, and further, that of these 90%, 88% produced a toxin that was neutralized by commercial scarlet fever antitoxin. Those strains that produced toxin not neutralized by commercial antitoxin might still cause scarlet fever, as Blake and Trask[5] have shown.

Since practically all children that carry hemolytic streptococci carry those whose toxins are neutralized by scarlet fever antitoxin, the question as to pathogenicity is not important. The important thing is whether or not an individual is carrying hemolytic streptococci. The work of the English investigators and of Dochez and of Wadsworth in this country points to the fact that any hemolytic streptococcus that is pathogenic for man may cause scarlet fever.

Sore throats among contacts of scarlet fever patients are extremely common; that these are caused by organisms causing scarlet fever has been shown by Stevens and Dochez[6] and by Bailey.[7] In Stevens' and Dochez's series of cases the evidence is all but irrefutable that the sore throat patients directly transmitted scarlet fever to their familial contacts.

The problem then becomes one in control of the hemolytic streptococcus, not the control of scarlet fever, erysipelas and hemolytic strepto-

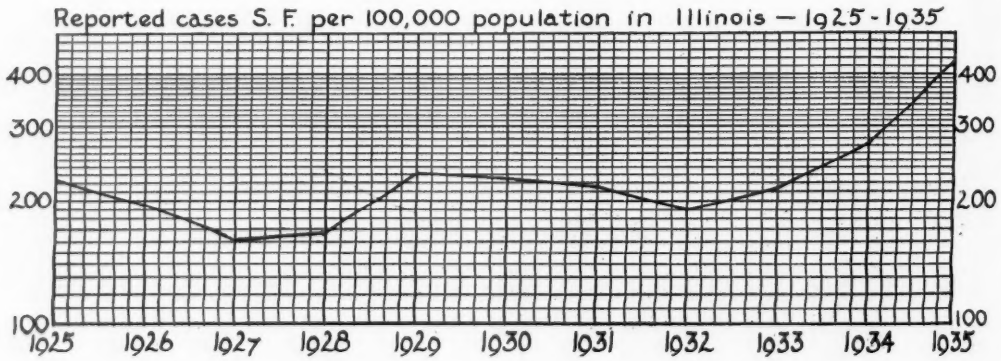

Figure 4.

coccic sore throats. The situation is identical with the typhoid fever situation forty years ago. The satisfactory results obtained in the reduction of mortality and morbidity due to this disease were accomplished, not by controlling the case, but by presenting the ingestion of the causative organism with our food and drink.

The control of the organism in the streptococcic diseases involves, primarily, control of individuals, although milk must be watched. The control of individuals is difficult, but in school children much can be done. A case in point is that of a school where scarlet fever was epidemic. The children of the school were cultured and all those carrying hemolytic streptococci segregated in a group that was taught separately and had recess at a different time from the rest of the school. The carriers were cultured weekly and returned to the non-carrier group on negative cultures. This procedure effectively stopped the progress of the disease through this school.

The seating arrangement, in those schools where seats are assigned to pupils, may be utilized to aid in the control of scarlet fever and sore throat. The principle involved here is the removal of the air contaminated by the vectors, before it can reach the normal children in the room. This method may be used only where artificial ventilation is employed in the school and it presupposes a knowledge of those who are carrying hemolytic streptococci. These are local problems, created by local conditions, and should be handled by the schools through the school physician and the local health authorities.

The cost of culturing a room of children in a school is small and the actual cost of medium is less than five cents a culture. The time necessary to culture the school population is not great —three hundred cultures may easily be made in a morning. Certainly this small outlay of time and money is well spent if a case of scarlet fever be prevented.

To cope adequately with these problems, trained school physicians are needed. Physicians, trained in communicable diseases, should be the choice for school physicians. While the school nurse or county nurse may render valuable assistance to the school doctor, the final responsibility of disease control rests with the physician.

Local health departments should concern themselves with surveys of carriers of hemolytic streptococci among the school children in their jurisdiction. A close cooperation between local health departments and the trained school physician will go far in the control of communicable diseases.

It is entirely possible that the new drug, para-amino-benzene-sulphamide, may prove of great value in the treatment of the carriers of hemolytic streptococci, but at the present time its value remains to be proven.

Active immunization against scarlet fever as a method of control is of questionable value. In institutions where it is practiced, the attack rate for scarlet fever has been reduced, but there is

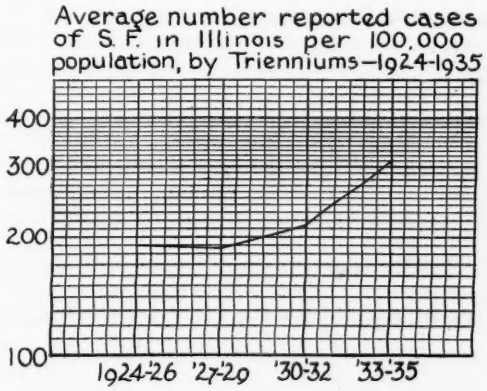

Figure 5.

no evidence that other streptococcic diseases, notably sore throat, have been affected. Hoyne[8] reports that the sore throat attack rate among immunized student nurses is 34.6%, a fact that casts considerable doubt upon the efficacy of immunization to control streptococcic morbidity.

The problem in control of streptococcic diseases resolves itself into the control of the organism. This means:

1. Control of milk.
2. Control of the normal carrier.
3. Control of hemolytic streptococcic sore throat in any of its forms.

Pasteurization of the milk supply is the only measure necessary for the control of milk-borne streptococcic morbidity.

The control of the normal carrier is a more difficult problem, one that for the present must be passed over unless an unusual amount of strep-

tococcic diseases is present. In the face of such a situation one is justified in recognizing that practically all carriers are carrying virulent organisms and as such are potential foci of the prevailing disease. Under these conditions isolation, if not quarantine, is a reasonable control measure.

The control of hemolytic streptococcic sore throats is probably the greatest problem in the control of the more readily recognized streptococcic diseases.

An illustration of these cases frequently causing scarlet fever is the case of the older of two children who had a sore throat and developed with it a peritonsillar abscess. This was drained in a hospital. Three days after returning from the hospital the younger child, who had not been out of the house during her brother's stay in the hospital, contracted scarlet fever.

Another example is that of an interne, suffering from a streptococcic sore throat, who transmitted scarlet fever to the diphtheria patients he was treating. There were six cases in this epidemic.

Many similar cases lead one to the conclusion that the hemolytic streptococcic sore throat is the most important factor in the spread of streptococcic diseases. Control will come only when the profession at large recognizes this fact and considers any hemolytic streptococcic sore throat as a source of danger to others; in other words, as a potential source of scarlet fever, erysipelas, puerperal sepsis, or sore throat.

1853 West Polk Street.

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DISCUSSION

Dr. Arlington Ailes, La Salle: There is an old saying that it is not so much what we know that gets us into trouble as we know so much that isn't so. It looks like here is another case where we may have learned some things that are not so. It seems to me that the gist of the paper lies in trying to prove to us that scarlet fever, septic sore throat, erysipelas and puerperal fever are all caused by the same organism. Now, I can't discuss this paper from the standpoint of a bacteriologist. I have to discuss it from the standpoint of a practical health officer. I can agree with a portion of his paper and agree very heartily, almost to the point of certainty, that we do have sore throats without rashes and sore throats with rashes that have apparently the same specific cause. Oftentimes the sore throat without a rash is primary and the sore throat with rash is secondary, but many times it is vice versa. My observation is that very often we have children or adults with sore throats only, who apparently give their disease to others who develop rashes. At best we have no knowledge at all and can find no evidence of their being infected from any other source. Very often we have cases of scarlet fever in our children followed by sore throat, without rash, in the adults or immediate members of that family.

Recently we had a little epidemic of scarlet fever in one of our schools in the first and second grades. We had no scarlet fever in the community that we knew of. We did have a little epidemic going on that was called the "flu." Some children of a family of seven were absent from this school because of illness. They called a doctor for one of the children. There seemed to be a little upper respiratory infection, with sore throat and fever, but there was no rash. The doctor called it influenza. Later on another child in the same family developed a sore throat, with the same symptoms. They called another doctor—they were a family on relief—and he also diagnosed it as influenza. A nurse was in the home about three times but saw no rash. Yet, at the end of two weeks one of the young children of this family came back to the second grade of this school, and twenty cases of scarlet fever developed. Five of those cases, however, had no rash. We quarantined them for 28 days on suspicion, because there was a little fever and sore throat which developed at the same time as the other illness in the grade. In another family, of this same epidemic, there was a girl seventeen years old who desired to stay away from the home. She did so for ten days, but when she came back into the home she developed a severe sore throat, which necessitated calling a general practitioner, and he in turn called a throat specialist. The diagnosis was quinsy and because of no rash was not thought to be scarlet fever, and the family prevailed upon me to release the case. I, of course thought we were dealing with scarlet fever since the case occurred in the same home, where we had definite evidence of scarlet fever. I released the family in four weeks, which made this girl have an illness of two weeks, and I released her also on negative cultures. I do not ordinarily release by culture but here I did defer somewhat to the opinions of others and released this girl. We don't have much scarlet fever, apparently, among our adults and I think they form a small factor in its spread.

I remember two years ago Dr. Smiley talked to us at Springfield, at the health commissioner's conference, in which he traced an epidemic of septic sore throat to a case of scarlet fever at a milk distributing plant. A number of us immediately asked Dr. Smiley how he could trace an epidemic of septic sore throat to a case of scarlet fever. He said, "I can't tell the difference between the organism that causes septic sore throat and that which causes scarlet fever, nor can any of you." Well, of course, we couldn't, or I couldn't. So, we had to let it go at that.

I remember last year Dr. Dean Davis of the University of Illinois medical school presented a paper in which he said that septic sore throat in its pathology, epidemiology, symptomatology and course was as definite a clinical entity as was scarlet fever, diphtheria, or measles, and he also went on to consider the special laboratory and cultural characteristics of the bacillus. He stated that there were areas in the world in which they did not have any septic sore throat, probably due to the fact that they boiled their milk or allowed it to ferment. These same areas have scarlet fever however.

It seems to me rather strange we have an epidemic of septic sore throat and don't quarantine for it, if it can change so suddenly to scarlet fever. We say it comes through milk, and that the infection gets into the udder of the cow through the milk canal of the teats, but when it comes back out with the milk it spreads as septic sore throat. I can't understand why the streptococci should be so modified in the udder of the cow that it will come out as septic sore throat and not scarlet fever, and cause no contact or practically very little contact infection. While if the milk is directly infected we can have an epidemic of scarlet fever and have a high rate of contact infection. We apparently don't have epidemics of scarlet fever or other streptococcic infections running promiscuously in to each other. In your epidemics of septic sore throat or scarlet fever they hold pretty true to form. In fact, I have never encountered an epidemic of septic sore throat, but have had many of scarlet fever. I believe Lee, Massachusetts, had a thousand cases a few years ago, and nearly forty deaths, all traced to one cow. However, our friends tell us the organism is the same as that which causes scarlet fever, erysipelas, or puerperal fever—only modified in the udder of the cow. I can't understand why this can be so, when the organism is only in the milk of the udder. Yet we all know that smallpox can be modified to cow pox in the body of the cow. So, it seems to me there is considerable doubt about this transformation of the hemolytic streptococcus. The doctor says, it depends upon the host or the soil for its changes, and shows a graph of erysipelas deaths as occurring mainly at the extremes of life. We know erysipelas is not at all comparable to scarlet fever, because the records of the State Health Department show we have only one case of erysipelas to thirty-five cases of scarlet fever, and we also know that erysipelas is prone to attack in the extremes of life. At one end of the graph he shows a high fatality rate and at the other extreme of life another high fatality curve, and to prove his point he fits scarlet fever between those two extremes, claiming the soil makes the difference. In our experience this is not true. We had something like 33 cases of erysipelas reported in 12 years and not a single one of these occurred under three years of age. We had three deaths, one of which occurred at about twenty-five years of age and two around fifty years of age.

The picture of scarlet fever, it seems to me, would more appropriately fit the picture of diphtheria. If we take the doctor's theory, it seems to me we have to forget all we have learned about immunology. Take the statistics in our district for scarlet fever for twelve years; in the first five years of life we had a total of 258 cases, the second five years 667, the third 416, and then a rapid diminution of incidence. The same thing is true of diphtheria. When the child is born it carries over some immunity from the mother, which prevents it from being infected very early in life from both scarlet fever and diphtheria. Later the child becomes susceptible, but the exposure isn't so great in the pre-school period. When the child enters school the exposure is much greater and the incidence increases rapidly. Then immunity develops and the incidence rapidly decreases. This picture is not true of septic sore throat nor the immunity gained by having scarlet fever does not protect against septic sore throat. They may say that the only immunity gained is against the rash and not against the sore throat. Well it seems strange that epidemics of septic sore throats do not produce more rashes if it is the same organism that causes scarlet fever.

The doctor mentioned also that the incidence of scarlet fever was on the increase, and showed graphs to prove that a difference in the quarantine period is the cause of it, which I deny. I deny that shortening the quarantine period from four to three weeks, with an additional week out of school, affects this increase. I believe the doctors generally are now much more alert than they were formerly and are reporting many more cases than they did before.

I believe there is a vast difference between releasing a scarlet fever case from the hospital to the home, where there are 24 hours of intimate association, and releasing a scarlet fever case from the home to the school where there is only five and a half hours of not nearly such close association. In my experience as a health officer, I have never found, where I have held the child in quarantine for three weeks, with an additional one week out of school, that there have been secondary cases coming out of the school from my case going back to the school. However, several times, where we have excluded a child to a neighbor or to relatives, where there were no children, and allowed it to come back into the home at the end of three or four weeks, it has come down with scarlet fever. I would like to have back again three weeks quarantine with four weeks out of school, because I get much better parental cooperation. I want to submit also that

we should adopt a liberal quarantine, leaving the wage earners to go to work, provided they don't come in contact with the children or the food supply, so that you get better parental cooperation. The mothers say, "I don't mind the quarantine if my husband can be with me at night." Of course getting more of the cases of scarlet fever under quarantine doesn't reduce our incidence rate but, in my experience, it has greatly reduced our mortality rate. I thank the doctor for his stimulating paper and the honor of discussing it.

Dr. Gottfried Koehler, Springfield: I was very much interested in Dr. Bailey's paper, not from the standpoint of a bacteriologist but from the standpoint of a school physician. In Springfield we have been threatened with scarlet fever during the past three winters. We had scarlet fever all around us. It was the mild type and, therefore, very hard to control. For instance, last year we had 240 cases among school children without a single death. I recall two cases from the homes of doctors who had sore throat and afterwards showed scarlet fever peeling. We found it very difficult to control the situation. After consulting with Dr. McShane and Dr. Tucker we decided upon a method of culturing these cases of sore throat. We have developed that method and had very good success with it. We did not culture the children in school rooms, unless scarlet fever occurred, because if we found the streptococcus hemolytica in healthy children we would not know how to get rid of it. But we did culture for the bacillus where there had been several cases of scarlet fever, and we cultured especially those cases that had been out of school for a day or so. We found quite a percentage of those cases were streptococcus carriers, and we excluded them from school until we had two negative cultures. By proceeding in that way we stopped several outbreaks of scarlet fever in the schools. A few months ago we had six to eight cases a day. Then we concentrated on culturing and we excluded from the schools all the streptococcus carriers in the rooms where scarlet fever had occurred. Several of these carriers which we found in school gave a history of a slight sore throat and afterwards developed peeling. We find there is frequently a relationship between the occurrence of sore throat and scarlet fever. Only yesterday afternoon, when I was getting ready to come here, I was called to a home where a doctor had diagnosed a case of streptococcic sore throat in one child. In the school they found the other child in the same family peeling on the hands and feet. The family called their own doctor in and he agreed with me that it was a case of scarlet fever, apparently about three weeks old. The other child that he had treated had a sore throat about three weeks before. That child was not peeling. These two children are being cultured today and if they show streptococci present they will be kept out of school.

I think we have a distinct aid in the control of scarlet fever by making these cultures. I do not see how we can control it if there are cases of sore throat that spread the disease. If they are mild cases of scarlet fever we have no way of recognizing them unless we can by culturing exclude those that show positive cultures of streptococcus.

I am not altogether in disagreement with the statement that Dr. Bailey has made in regard to the relationship between streptococcic sore throat and scarlet fever because we so many times see cases of sore throat, with positive streptococci and followed in the school room by cases of scarlet fever.

Dr. C. C. Ellis, Moline: Last year I came into active local health officer work in Moline and in the fall we started to have some scarlet fever in the schools and it went on until a number of cases had developed. I wrote to Dr. McShane and asked him if he could suggest something. He sent Dr. Bailey up to see me and when he arrived we went to work. I believe some of the cases he referred to in his paper were cases in that school. We commenced culture work at once and then found a large percentage of carriers. The proposition was made to separate the carrier population from the non-carriers at once, and let them all attend school in separate sessions. This seemed to work very well. It reduced the rate of incidence immediately, although we had a few cases—no great number however. After some time, though, we ran into this situation, that the convalescents did not become negative. Then the question came up, what to do. We finally decided we would have to bring them back to school. They could not stay out forever. Some of the tonsils could not be taken out. Some of the parents would not consent. There was no way to take the tonsils out or force them to do this, and besides we did not know whether that would do any good or not. So, they came back to school after, I think, eight or nine weeks of separation. But by that time something had happened in those throats. After being virulent, they became avirulent or relatively so. We got no further cases of scarlet fever in that school.

At this juncture I found something unusual—a milk-borne epidemic. The infection came from a cow. The first case was unreported. The second case in the township was reported to me by error. I reported it to the supervisor, who could not get there because of the snow. Then the next thing we knew two or three cases occurred in the town and we found they were all from one dairy; then six or seven cases. I asked the dairyman if he knew there was any scarlet fever on his route, and he said, no. I said, "Do you know of the case of Mr. L., a farmer?" And he remembered that he had a man that gave him milk, and that was the case that had been reported to me from the country. This case was referred to the State Department. The cow was found to be carrying scarlet fever germs in the udder, and I have the statement in black and white from the Department, that that is the first known case where scarlet fever was absolutely traced to a cow and to the cow's udder. So you can have cases of scarlet fever as well as septic sore throat from the cow.

I have used this culture method after that experience in all cases. And we hold everybody in quarantine until we get rid of some of them as carriers. I maintain the quarantine in this way; those in high school I send back immediately; those in the junior school I let go back soon, realizing that the incidence was not high in those schools. It is in the lower grades. The children in the lower grades we hold until they have their tonsils out, until the school ends, or they become negative. Finally all of them go back and then nothing happens. Our scarlet fever epidemic ends and as summer comes there is not a case left.

I feel that with culture control you can do a lot, and with a protraction of the quarantine where necessary, rather than an arbitrary general shortening or lengthening of quarantine, you can prevent convalescent carriers. It does seem that these streptococcic germs become avirulent, or that they are subject to mutation. I think the virulence goes up to a certain point and then goes down, but I am not sure of that.

The Doctor will have to prove conclusively to me that these diseases he discusses are interchangeable. I think there are conditions that he has described that probably cause the mutability.

I think we should have one more thing to add to our control and that is this: When I get a negative or two negatives or three negatives, will Dr. McShane let me turn the case loose in three weeks? He has refused so far. He has said, "no shortening of the four-week period."

Dr. John J. McShane: Dr. Bailey, in your study of the different diseases that you have reported on, did you find more than one type of streptococci in this group? If there is a large number of varieties of hemolytic streptococci, I would like to be advised whether you found more than one, two or three strains among this group.

LESSONS LEARNED FROM A BLIND SCHOOL SURVEY

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INDIANAPOLIS, INDIANA

Four years ago a statement was encountered to the effect that many State Schools for the Blind have very inadequate and inaccurate records of the causes of blindness of their students. This almost incredible charge led to an investigation of the records at our own Indiana State School for the Blind. Only about five minutes of study were required to determine that no records could be worse than those of our school. A few examples of the causes of blindness given on the entrance applications of the students, together with the causes determined by examination, are shown in the following list.

CAUSES OF BLINDNESS

TABLE 1 Given on Application	TABLE 2 Found by Examination
1. "Following flu."	1. Buphthalmos.
2. "Do not know."	2. Ophthalmia neonatorum.
3. "As near as we know, skull fracture."	3. Hereditary macular degeneration. Optic atrophy.
4. "Chicago specialists could not determine."	4. Albinism with macular degeneration and optic atrophy.
5. "Right eye, trauma. Left eye, congenital amblyopia."	5. Right eye, corneal scar, reads Jaeger No. 3. Left eye, syphilitic chorioretinitis with extensive scars.
6. "Right eye, tumorous condition. Left eye, cataract."	6. Right eye, persistent tunica vasculosa lentis with mal-development of iris. Left eye, uveitis with cataracta complicata.
7. "Fall on the head plus blood disease."	7. Luetic disseminated chorioretinitis with optic atrophy.
8. "Neglect."	8. Ophthalmia neonatorum.
9. "Born blind."	9. Congenital cataract.
10. "Inheritance."	10. Congnital aniridia and upward dislocation of lenses.
11. "Eye-Ritus."	11. Interstitial keratis and uveitis.
12. "Doctor used too-strong drops in the eyes at birth."	12. Ophthalmia neonatorum.

With the firm belief that no study could be more interesting than that which was greatly needed and long overdue at the school, a systematic survey of the student personnel was undertaken and has only recently been completed. Many diagnostic problems were encountered, which are deserving of comment. Several lessons were learned, which should arrest the attention of every ophthalmologist.

The diagnostic difficulties were dependent upon several factors. One of these was the complete lack of an adequate history. Nothing more than the foregoing chart is required, to give a vivid understanding of the kind of histories which were available in writing. The histories given by the students at personal interviews were indefinite and valueless. Thus nothing remained but to reach a conclusion, as to the cause of the blindness of each eye, by examining it externally and ophthalmoscopically. Fear of the examination disturbed some of the students, and made thorough inspection difficult. Rapid nystagmoid movements of the eyes, or inability to fix the

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gaze, made of the ophthalmoscopic examination a challenging task, especially trying since most of the inspections were made through undilated pupils. The abstinence from use of mydriatics was the result of a promise made to the superintendent in office at the time the examinations were first undertaken. Our present superintendent, Mr. Robert Lambert, has been most cooperative, and under his regime there have been absolutely no restrictions to hinder satisfactory work.

With no histories and only objective findings to aid in differential diagnosis, the resulting problems were many. For example, the eyes of two chldren exhibited pictures quite typical of the sequellae of ophthalmia neonatorum. One of these, under careful observation since she was ten days old, has never had a conjunctivitis. She was born with corneas which had failed to clear, plus microphthalmia and sclerotics congenitally thin. The other child had a definite history of destructive corneal ulceration which complicated scarlet fever at five years of age, with normal eyes prior to that time. Without histories, both of these diagnoses might have been wrong. Even so, without histories on most of the students examined, there may be several diagnoses wrongly determined and recorded in the table to follow shortly.

After arriving at reasonably accurate determinations of the causes of blindness, their classification presented further difficulty. Correct grouping of the large number of optic nerve atrophy cases was hindered by frequent doubt as to their underlying pathology. Furthermore, many of the eyes suffering from aberrations in development exhibited many different anomalies: congenital cataract or coloboma of the iris were sometimes associated with microphthalmia; congenital coloboma of the macula showed an accompanying optic atrophy; and one pair of eyes exhibited congenital cataract, optic atrophy and macular degeneration. The classification which was finally evolved is listed in the following table:

TABLE OF CAUSES OF BLINDNESS

(152 Students Examined)

Cause	Number	Percentage
1. Optic atrophy		
a. Associated with congenital or hereditary retinal maldevelopment or degeneration	15	
b. Postneuritic	10	
c. Assoc. with luetic chorioretinitis	9	
d. Assoc. with congenital macular coloboma	5	
e. After meningitis	5	
f. Associated with pigmentary degeneration of the retina	3	
g. Cause not determined	2	
Total	49	32.2%
2. Congenital cataract (Some with dislocations, microcornea, O.A., retinal degeneration, etc.)	31	20.4
3. Ophthalmia neonatorum	21	13.7
4. Uveitis (with sequellae)	11	7.2
5. Buphthalmos	10	6.5
6. Interstitial keratitis Three sequellae of uveitis, one with O.A.	10	6.5
7. Congenital aniridia	4	2.6
8. Trachoma	3	1.9
9. Sympathetic ophthalmia	3	1.9
10. Coloboma of iris, ciliary body and choroid, microphthalmos	2	1.3
11. High myopia	2	1.3
12. High hyperopia	1	0.65
13. Corneal ulceration with scarlet fever	1	0.65
14. Microphthalmos, congenitally opaque corneas	1	0.65
15. Neuroepitheliama (both eyes enucleated ten years ago)	1	0.65
16 Albinism	1	0.65
17. Cause undetermined (examination not permitted)	1	0.65

The interesting ophthalmological survey of the Illinois State School for the Blind, reported in the July, 1934, issue of the *American Journal of Ophthalmology* by Adams, Gamble, Gifford and Gradle, revealed the fact that approximately 25% of the students in the school belonged in sighted classes. Of these, 7.5% belonged in public school, and 17.2% were candidates for sight-saving classes. The close approximation of these figures to the findings at the Indiana State School is immediately apparent upon examination of the following chart. (The ability to read Jaeger types, upon which many of the visual acuity estimates were made, may be open to criticism. However, this test would seem to give a fair idea of the students' ability to acquire sighted or partial-sighted training.)

Students who need blind school training	114	75%
Students who should be in sight saving classes. (J. 12 to J. 7 inclusive at 20 cm.)	33	21.7%
Students who should be in public school (J. 6 or better at 20 cm.)	5	3.3%

In a second communication (A. J. O., January, 1937), Adams, Gamble, Gifford, and Gradle, reported a reduction of the students who should be in public school to 3.1%, with all of the

17.2% who needed it, receiving sight-saving class instruction at the school. This is an excellent economic and social contribution, which we are still lacking in our Indiana School.

Not long ago the monthly meeting of the eye staff of the Indiana University School of Medicine was held at the School for the Blind. At this meeting a large group of students was exhibited, some because their eyes presented problems in diagnosis and others because they represented interesting aberrations in development. Some of the men commented about the remarkable museum of pathology which they had been privileged to study. Others were depressed by the utterly hopeless condition of the large number of eyes which they had seen. But the greatest number of them remarked with deep feeling about the large number of blind eyes which should not have been blind. This thought is the one which most arrestingly and depressingly overshadows all others, when any large group of blind children is examined. The blindness of so many of them is so unnecessary and could have been so definitely prevented.

The children in our school with preventable blindness have been tabulated as follows:

1. Ophthalmia neonatorum	21 Cases	
2. Interstitial keratitis	10 Cases	
3. Uveitis, at least some of the	11 Cases	
4. Optic atrophy with luetic chorioretinitis	9 Cases	
5. Trachoma	3 Cases	
6. Sympathetic ophthalmia	3 Cases	
7. Congenital cataract (birth control)	9 Cases	of 31
8. Congenital aniridia (birth control)	3 Cases	
9. Buphthalmos	10 Cases	
Total	79 Cases	

There seems to be deeper irony in the fate of these youngsters when we note how very profound is the visual loss of some of these very children who should not be blind at all, those with the sequellae of ophthalmia neonatorum, sympathetic ophthalmia, buphthalmos and leutic optic atrophy being vivid examples. No child should have interstitial keratitis. It is reasonable to believe that most cases of uveitis should be saved from blindness by early, adequate and persistent treatment. A woman may reasonably expect to have children without congenital cataract (unless she and her husband are both so afflicted themselves, as were the parents of two of our students). But if she deos have one child with congenital cataract, why should she have four, or three, or two with this condition? In the group of nine preventable congenital cataract cases, listed in the above table, only those *after* the first one in each family are included.

It is this large percentage of children with preventable blindness which hurls an unavoidable challenge to the ophthalmologists. What are we going to do about it? How can we give the best service in this branch of preventive medicine? Very little thought leads to the firm conviction that we can do very little by ourselves. We may work our hearts out in the effort to save eyes already on fire with gonorrheal ophthalmia, uveitis or sympathetic ophthalmia when they come under our care. But before we come into the picture someone should have known better than to have allowed these conditions to occur. Some of us, who are privileged to work with groups of blind young people, find several of them who are anxious to discuss the question of their marrying and having children. But our opportunities are few for advising young people about their prospective parenthood.

Further thought soon leads to the conclusion that our fellow physicians and the social service workers are the two groups upon whom we must depend for our help in this work. As in other branches of medicine, there are many phases of ophthalmology which depend for their successful management as much upon competent, well-trained social service workers as they do upon the physicians themselves. Any physician who has enjoyed the cooperation of a well organized social service department will agree with this statement. Our cooperation with the social workers should be unreserved, careful and conscientious, whenever it is asked of us.

Of all the lessons learned during this survey, the most impressive is how utterly dependent are we ophthalmologists upon our fellow physicians, for aid in the prevention of blindness of children. We are often asked, by our local medical societies, to prepare papers for their programs. No subject should be of more interest or value to them than the prevention of blindness. It is in fact our duty to periodically bring this subject to them. We should remind them of the importance of routine prenatal Wassermann tests upon their expectant mothers, with treatment of mother and child as indicated. Interstitial keratitis and chorioretinitis of congenital lues can be

thus eliminated. We should review with them the correct application of Credè treatment to new-born babies' eyes. Silver nitrate conjunctivitis, when it occurs, need not be embarrassing and it does not blind babies' eyes. Careful routine observation of the eyes of children during attacks of febrile disease, with determination of the exact cause of all "red eyes," may prevent blindness from the effects of untreated uveitis. All men engaged in obstetrics and pediatrics, either as specialists or in connection with their general practice, should know how to use an ophthalmoscope well enough to discover opacities in the media and gross lessions in the fundus. The family doctor, discovering the presence of congenital cataract in the first child, can intelligently and logically explain to the parents how great is the possibility of congenital cataract in any further children they may have. His check on the size of the globe, the diameter of the cornea, may bring the child with buphthalmos to the eye surgeon in time to save useful vision. We should talk about these things to our colleagues in other branches of medicine until they get tired of listening to us.

As a concluding thought, would it not help in the prevention of blindness if each one of us reported to the proper organization every new case of blindness, in child or adult, occurring in our own practice every year? In Illinois, your own Society for the Prevention of Blindness should receive these reports. In Indiana we have no such State organization as yet, but the National Society would eagerly welcome such valuable data. To this suggestion the objection has already been raised that much duplication would occur, as these blind people go from one doctor to another in search of aid. Giving the patient's name would avoid this, as would also our definite adherence to the rule of reporting only those patients who lost their vision while under our own treatment.

23 East Ohio Street.

DISCUSSION

Dr. Austin A. Hayden, Chicago: I want to thank Dr. Masters for the tabulation he made in Article 4 of the Chicago Survey. The article reads that the Chicago specialists could not determine the cause—and he very cautiously skipped that part. Seriously, Dr. Masters has given a very comprehensive resume of the situation in Indiana. I noted his figures, and of 79 cases cited, as he says a very large number were in the preventable class, 21% could have been saved by silver nitrate properly instilled. I regret that he did not state how many of these were physicians' cases and how many were midwives' cases or unattended.

In the matter of interstitial keratitis and optic atrophy, it is a strang thing, but it is a fact that of all the progress made in medicine since the Wassermann test was introduced for syphilis, only a very few hospitals in the country have a Wassermann blood test, to say nothing of spinal fluid test, made routinely in all obstetric cases. I had occasion to call attention to this not long ago before the American Medical Association Section on Ophthalmology, and I found that ophthalmologists were not very keen about the observation of this, and that obstetricians were almost in the same classification. I am told that a Wassermann-negative mother cannot give birth to a syphilitic child, and that even if the disease is discovered as late as the third month of pregnancy, a case of interstitial keratitis rarely happens.

I was impressed by what Dr. Masters said about the value of the social worker. Miss Audrey Hayden was responsible about three weeks ago for a broadcast over one of the large Chicago radio stations, on Sunday at twelve o'clock, and I heard this while riding through Indiana, and it had to do with the same subject of building better citizens. It was put on by some association in Chicago, and very dramatically presented the thought you expressed when you said the social worker has a place in this campaign. Let me say that the moving picture of syphilis that is being produced by the United States Public Health Service and the American Medical Association, will have, I hope, a very stimulating effect in making for a much more active campaign on the part of all doctors, public health, private and clinic, toward the elimination of syphilis. Of course nobody things syphilis will be eliminated, but the effort is toward the reduction of the prevalence of syphilitic disease.

Dr. Philip Corboy, Chicago: I would like to ask one question, not dealing with the fact that the mother can be tested. It has been my impression that pediatricians differ as to the value of a Wassermann or a Kahn in the child, and it has been my experience that neither has any significance in the first six months of life in making serological diagnosis.

Dr. C. W. Hawley, Chicago: I am not competent to discuss the statistics of blindness, but I can discuss the question of ophthalmia neonatorum. I do not believe a single child need lose an eye from this cause. That is a broad statement. I had a clinic in Cook County Hospital for many years, and of course we had many cases there, and in all the cases I saw I never lost an eye or had a blind eye. I learned how to take care of ophthalmia neonatorum, and I believe I can say that not a single baby need lose its eye if taken care of properly. This is not the place to tell how to do it, and I will not discuss that, although I have done so before. What I say is true, as you may know if you

believe my reputation for truthfulness and veracity. I had a large clinic at the Post-Graduate Hospital and here too a good many babies were brought in with opthalmia neonatorum. We had some cases of gonorrheal ophthalmia in older patients, and these cases were taken care of in the same way with very satisfactory results.

Dr. Robert J. Masters, Indianapolis (closing): I wish to thank all the discussors, particularly Dr. Hayden for emphasizing the great things that can be accomplished in the way of prevention of those forms of blindness which are dependent upon congenital lues. I only included the "specialists not able to determine" case, because it was one of the funny causes of blindness that came in, and of course there was no way of telling that an eye physician had really seen the child in question.

Answering the question as to early Wassermann, it is my impression that during the early months of infancy the Wassermann test is not as reliable as we would wish. This emphasizes the importance of prenatal tests in the mother. When the tests are so readily available these days, free if necessary by the State laboratories, they should be routinely made.

In outlining the things to discuss with men in general practice at home, I only tried to touch upon a few of them. I believe it is interesting to a general medical society to hear a talk on the causes of blindness as they relate to the cases in which men in their own practices may help in the prevention of blindness.

SOME DANGERS OF RAPID DIURESIS

M. HERBERT BARKER, M. D.

CHICAGO

The literature abounds with articles on diuresis, but very little is said about certain dangers of rapid diuresis in that great group of cardiac, renal and renal-vascular disease which makes up our greatest number of cases of edema. With the improvement of diuretic management, edema as such is much more readily controlled and we are too frequently tempted to watch the urine volume curve or weight drop without sufficient regard to the concentration of the waste products which may be less easily eliminated. Certainly, during diuresis, the piling up of minerals or medication with a resultant acidosis, uremic state or drug poisoning readily occurs.

Diuresis has always been a problem to the physician. The patient is usually more disturbed over the external evidences of a disease, so that a gross anasarca may instigate more vigorous therapy than a more serious disease which he is unable to observe. With the remarkable report on Foxglove by William Withering[1], came one of the greatest steps for relieving the patient of cardiac dropsy. Thus, digitalis opened a whole new chapter in pharmacology which still advances. The great array of zanthine compounds clearly show the continued demand for better diuretics. the same may be said of the mercurials. The use of calomel in the edema of nephritis appears as a regular practise in the protocols of Richard Bright.[2] Saxl,[3] Keith,[4] Barker and O'Hare[5] and others have written on the efficiency of the mercurials as a diuretic in cardiac, renal and other problems of fluid storage. We are all particularly indebted to Dr. Keith and his co-workers[6] for combining the use of a controlled ionic diet with the administration of ammonium chloride or ammonium nitrate as great adjuncts to mercurial diuretics. The experimental demonstration of the role of sodium and potassium in the storage and clearance of body fluids by Barker[7] lead to the successful application of these findings as a more physiologic control of clinical edema. Certainly, this liberal diet which is low in sodium, high in potassium with potassium chloride as a salt substitute may be well tolerated by chronically ill patients for long periods of time.[8] More recently Keith and Binger have become interested in the diuretic effects of potassium and they have shown potassium nitrate to be an efficient diuretic salt.[9] It is interesting that all of the above principles have been in use in one way or another for many years, but only in the last few years have sufficient studies been made to correlate the whole into quite an efficient diuretic regime. I regard the development of such a flexible program of diet, minerals and diuretics as one of the finest steps made for the comfort of the patient carrying edema and all that its control connotes in combating the underlying process.

It must be remembered that edema is only a symptom and that the fundamental problem must not be slighted. The volume of fluid in the edematous patient is frequently much larger than one's greatest estimate. This fluid must be cleared through the kidneys and often either the long standing passive congestion or actual renal vascular disease or both alter greatly

From the Bettie Soper Clements Ward of Passavant Memorial Hospital and the Department Experimental Medicine of Northwestern University Medical School.

Read before Section on Medicine of Illinois State Medical Society, at Peoria, May 18, 1937.

their ability to clear minerals and waste products of protein metabolism. No doubt nature's dilution of retained materials is often a most important physiologic safeguard. The reverse of the process, therefore becomes a most important

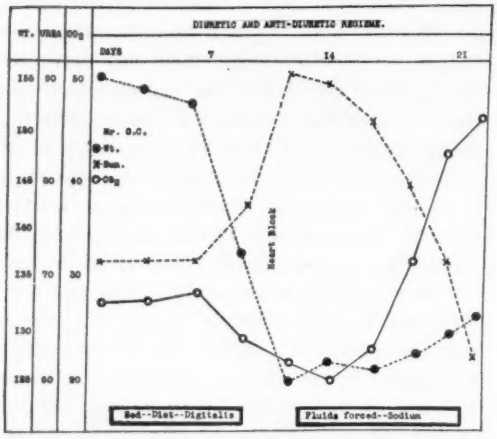

Figure 1. Note the rapid rise in the blood urea nitrogen and the fall in the CO_2 following the dieuresis. Heart block was associated with the concentration of digitalis in the edema fluid. An active anti-diuretic regime consisting of forcing fluids and giving sodium resulted in correcting the uremic manifestations as described in the protocal.

matter to such patients unless careful observation

The following three cases serve to show some of the dangers experienced in rapid diuresis. is maintained.

G. C. male, aged 34 years, complained of shortness of breath, nocturia, edema and ascites. The chief physical findings were blood pressure 158/128, pulse 90, regular, large heart, systolic blowing murmur at the apex, signs of fluid at the right subscapular region, liver down a hands-breadth, moderate ascites, and moderate edema of the sacrum and lower extremities. The chief laboratory findings were R. B. C. 5,370,000, Hgb. 12.0 grams, W. B. C. 14,100, urine +++ albumin, numerous hyaline and occasional granular casts. The phenolsulphonphthalein excretion was 4% for two hours and this was verified by repeated examination. The urea clearance was 10% of normal. The blood urea nitrogen was 73 mgms. and the carbon dioxide combining power was 26.8 volume %. A low sodium-high potassium neutral ash diet was started and digitalis I. B. D. was prescribed. Potassium chloride was used as a salt substitute. Reference to Chart I clearly shows the course which followed.

GRAPH I

As diuresis began and the weight began to fall, there was a concentration of the blood urea nitrogen from 73 to 91 mgms. and the carbon dioxide fell from 26.8 to 20.0 volume %. Headache, nausea, and orthopnea appeared. An antidiuretic regieme was initiated which consisted of stopping the digitalis, increasing the fluid intake from 1500 to 2500 c.c. per day and the addition of calcium carbonate 10 grams and sodium bicarbonate 5 grams daily. The diuresis continued for four days and the body weight continued to drop. A short period of coupling was followed by complete heart block (pulse 45). A rapid improvement followed the forcing of fluids, alkalinization and a period of balanced intake and excretion of fluid.

This case demonstrates the concentration of nitrogenous products, the deepening of the acidosis and heart block associated with a rapid diuresis. An active antidiuretic plan of stopping digitalis and potassium chloride and the addition of sodium bicarbonate and increased fluid intake, arrested the diuresis. Body weight increased slightly and there was a relief of symptoms. A return to the diuretic plan resulted in a complete loss of edema and a marked improvement of the cardiorenal state.

Mr. F. J., manufacturer, aged 50 years, a known severe hypertensive for years, complained of shortness of breath, weakness and periodic edema of the legs for one and one-half years. Headaches, nausea, marked edema, ascites and nocturnal dyspnea, for which he had entered two hospitals for the preceding eight months, were the chief presenting complaints. There was marked enlargement of the heart, rate 110, with a pronounced gallup rhythm. He was very stuperous and a uremic odor was noted. Blood pressure was 250 to

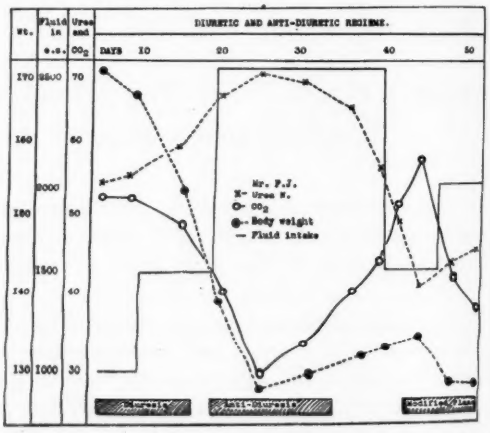

Figure 2. A rapid rise in blood urea nitrogen and a decrease in the CO_2 with uremic stupor following the dieuresis. Note the decrease in body weight. An antidiuretic regime of forcing fluids, change of diet to alkaline-ash type with the addition of alkaline salts corrected the acidosis and the uremic state. The patient was rehabilitated by a modified dieuretic program as described in his protocal.

260 over 140 to 156. The urine specific gravity was 1.012 and it contained 1 gram of albumin per liter. A moderate number of hyalin and occasional coarse granular casts were present. The phenolsulphonphthalein excretion was 4% and checked at 6% for two hours. Other laboratory findings were total serum proteins 7.94, serum albumin 4.46, R. B. C. 4,330,000, HGB 11.2

gms. and W. B. C. 8,350. The blood urea nitrogen was 55 mgms. and the urea clearance was 14.4%. The blood chlorides were only 440 mgms. The carbon-dioxide combining power was 54.0%. The management was started which consisted of an acid-ash, low sodium, high potassium diet. Because of the low blood chlorides and the need of chlorides for diuresis, two grams of ammonium chloride were given twice daily. A rapid diuresis began in 36 hours. Reference to Graph 2 shows the rapid increase of urinary output and the resulting weight loss. The fluid intake was increased as fast as tolerated. The diuretic regieme was interrupted as quickly as blood chemistry changes were noted. The carbon-dioxide dropped to 38 and the urea had increased to 64.5 mgms. in 20 days. The diuresis continued and the patient became more acidotic and uremic so that a vigorous anti-diuretic regieme was instituted. This consisted of an alkaline ash, low phosphorus diet, and the addition of calcium carbonate 15 grams and sodium bicarbonate 10 grams daily. Fluids were continued at tolerance. The diuresis was soon arrested and a marked relief of the symptoms was associated with the increase of his weight and with the improvement of the acidotic and uremic state. The patient was gradually completely freed of his edema, ascites, gallop rhythm and the other untoward symptoms by a modified diuretic plan of a neutral ash, low sodium-high potassium diet with 3-5 grams of potassium chloride in a shaker as a salt substitute.* This patient illustrates the danger of a rapid diuresis in the decompensated cardiorenal problem. The development of acidosis, increased nitrogen concentration with stupor might well have been accepted as a terminal uremic affair had not the laboratory clearly indicated the rapid changes going on within the patient so that prompt and vigorous dietetic and anti-diuretic adjustments could be made.

A third case demonstrates the chief dangers of a rapid diuresis in a girl, aged 19 years, weight 116, suffering with end-stage glomerular nephritis and edema. The renal function tests showed a fixed specific gravity, a dye excretion of 5% and 7%, and the blood urea nitrogen was 69 mgms. The blood phosphorus was 6.8 mgms. per 100 c.c. and the carbon dioxide was 68.3 volume %. The management consisted of a neutral ash, low sodium-high potassium diet. A dieuresis followed and as the retained minerals and waste products became more concentrated because of the poor renal clearance, the blood phosphorus and urea mounted rapidly to 9.4 and 140 mgms. respectively with a resultant acidosis and a uremic state. (See Table.) A quick shift to an alkaline ash, low phosphorus diet with calcium carbonate 10 grams daily together with 3 grams of sodium chloride on the food arrested the diuresis. Intravenous isotonic glucose solution 2000 c.c. daily for three days was given in addition to all the fluids that could be tolerated orally. An increase of the carbon dioxide, a drop in blood phosphorus and blood urea were associated with clinical improvement. (See Table 1.) A return in a few days to a diuretic regieme of a low sodium, low phorphorus, neutral ash diet with potassium chloride as a salt substitute resulted in a further diuresis and clearance of the waste products without again suffering the acidosis and uremic manifestations.

V. T., Age 19.

Date	Weight	Urea	CO_2	P.	
10/3	116	69.0	68.3	6.8	Diuresis
10/9	111	117.	37.2	7.85	Diuresis
10/13	106	140.	31.5	9.4	Diuresis
10/19	102	100.	47.5	7.0	Anti-diuresis
10/25	103	92.5	56.0	6.6	Anti-diuresis
11/1	*103*	*63.8*	*52.3*	*6.8*	*Anti-diuresis*

*The latter serves not only as a diuretic but as a fairly good salt substitute which renders a salt-free diet quite palatable. Too frequently prescribed and sorely needed diets are deserted because of a justified intolerance which thus may be avoided.

LOW PROTEIN-LOW PHOSPHORUS DIET

Calories 1600, P. 41, F. 61, Cho. 220, Phosphorous .63.

Note: All milk, eggs, cheese, milk soups, broths, excluded during the first stage diet No. I—in order to keep the protein down to 40.

EAT

Fruits: Both raw and cooked. Oranges, grapefruit, lemons, dried figs, apples, applesauce, apricot canned and dried, bananas, blackberries, cantaloupe, cherries, cranberries, dates, grapes, grape juice, lemon juice, olives (green stoned), peaches, pears, pineapple (fresh, juice and canned), plums, raisins, raspberries, strawberries, watermelon—4 large servings a day.

Vegetables: Asparagus, string beans, beets, cabbage, carrots, cauliflower, celery, corn, cucumbers, eggplant, hominy grits, kale, kohlrabi, lettuce, onions, green pepper, potatoes (white and sweet), pumpkin, radishes, rhubarb, rutabagas, spinach, squash, tomatoes, watercress—6 servings a day.

Cereals: Farina, cream of wheat, macaroni, rice, puffed wheat—2 servings daily.

Butter: May be taken ad lib—however for 1600 calories use the specified amount below.

Bread: White—6 slives a day.

Jelly: Added to raise the caloric intake.

Meat or fish (such as whitefish): 50 grams or approximately 1½ oz. daily.

Beverages: Weak coffee, weak tea.

Sugar: Allowable, but not calculated in this diet.

Sample Menu for one day.

Breakfast

Whole orange.

½ cup farina cooked in water.

2 slices white toast.

2 pats butter.

3 tbsp. cream.

2 tbsp. grape jelly.

Coffee.

Dinner

1½ oz. chicken—stewed.

½ cup potato.

½ cup string beans.

Lettuce and tomato salad.

1 banana.

2 slices bread.

2 pats butter.
Tea.
3 P. M.—Baked apple.

Supper

½ cup bld. rice.
Asparagus—7 stalks.
½ cup carrots.
Cole slaw.
2 slices bread.
2 pats butter.
Canned apricots.
2 tbsp. grape jelly.
Tea.

Fruits excluded because of high phosphorus would be: prunes and currants. Vegetables excluded for same reason: parsnips, mushrooms, lima, navy, and kidney beans.

Discussion.—With the present improved diuretic management made possible by the combined dietary, mineral and drug therapy, a great caution must be exercised in those cases of long standing cardiac, renal or renalvascular disease where the clearance of the large amount of waste products of protein metabolism, minerals and acid metabolites is embarrassed.

The great benefits derived from a physiologic diuresis can not be too greatly emphasized. Certainly, many patients with decompensated heart disease of long standing have been made comfortable and rehabilitated by a carefully continued diuretic regime. Sufferers of chronic nephritis with edema have been similarly benefitted over long periods of time. However, some cases are greatly endangered by the clearing of the edema from the body which is excreted faster than the materials in solution in it. This is especially true of waste products of protein metabolism and acid radicals have retained minerals such as phosphorus. The fact that drugs usually are quite evenly distributed through the body fluids make diuresis an element of danger in some cases. This is true of digitalis as illustrated in the first case so that the decrease or discontinuance of drugs early in diuresis may be desirable at times.

CONCLUSIONS

1. Dangers of rapid diuresis must be considered especially in the cases of long standing edema.

2. Those dangers are chiefly the result of the concentration of retained materials which result in a severe acidosis, uremic state or drug intoxication.

3. One must be alert to the urgent need for the control of diuresis by an active anti-diuretic plan as discussed above.

700 N. Michigan.

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DISCUSSION

Dr. Harry A. Durkin, Peoria: The old time clinicians had a dictum that the edematous patient never developed uremia. Moreover, they recognized the disturbances which might attend a too rapid removal of fluids by the then current measures of sweating and purgation. This was before the days of blood chemistry, and they had no way of finding what it was all about. Dr. Barker is one of the pioneers in the study of diuretics and this paper, which portrays so clearly the mechanism of dangerous diuresis, is a valuable and timely contribution. By emphasizing the changes which take place in the electrolyte pattern, it puts the entire problem on a rational basis and thus makes possible a more intelligent therapy.

The modern diuretic regime has reached such a surprising degree of effectiveness that both doctor and patient are often elated at the amount of water that can be lost. The warning contained in this paper may well temper our enthusiasm and caution us to proceed more deliberately. Naturally, the patient who presents definite evidence of kidney impairment is the most likely to get into difficulty. Cases of edema due to straight congestive failure get into trouble but rarely. I can recall a case seen years ago with congestive failure and anasarca, who was dehydrated with 40 grains of calomel. She developed acute headache, complete disorientation and collapse. She was quickly relieved by normal salt solution intravenously. Several others have shown exhaustion and mild circulatory collapse, and have responded to the same treatment. In these milder cases, it is possible that hemoconcentration takes place faster than fluid can be withdrawn from the intracellular spaces, with resultant peripheral failure. Because of these disturbing possibilities in the management of congestive failure, it is wise to digitalize first and await

results. If diuresis is not satisfactory, one can then proceed to the employment of the xanthine compounds, the mercurials, and the various salts of ammonium and potassium.

Closely related to this discussion is the occasional occurrence of acute dehydration and uremia in patients who are being treated by hypertonic solutions of various substances. I have indirect information of two deaths which occurred in patients who were being treated for B. proteus infections by using 25% sucrose. They developed excruciating headache, became annuric and died in typical uremia.

In conclusion I wish to thank Dr. Barker for bringing to our attention a subject which may become increasingly important during the present period of high powered diuretics and upon which the literature up to this time has been strangely silent.

Dr. M. Herbert Barker, Chicago (in closing): I am anxious to emphasize that we are talking chiefly about—as I am sure Dr. Durkin meant to mention—the renal-vascular group where renal function is poor. In my experience the ordinary congestive heart has not in any way been made worse by a diuresis and on the contrary it is greatly improved. However, if the patient happens to be an old hypertensive of long standing that has advanced to a degree of marked failure with chronic passive congestion of the kidneys, to wring him out rapidly is fraught with danger. Most patients are diuresed with great relief and that is the reason for the rapid acceptance for all types of this therapy. I am sure most students of heart disease are of the opinion that in order to maintain a weak or poor circulatory mechanism, diuresis and continued diuretic regimens are in order. In this way the patient is given many years of productive life, so it is a most comforting and life lengthening bit of therapy. However, there is a real danger in diuresing the longstanding cardio-renal vascular patient who has renal embarrassment as these case reports indicate.

METAPHEN INTRAVENOUSLY IN THE TREATMENT OF TULAREMIA

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Although the causative organism of tularemia was first isolated in 1912 by McCoy and Chapin, little progress was made for twenty-two years in the treatment of the clinical entity produced by the Pasteurella tularensis.

As one reviews the literature, scant information is obtained. Practically without exception all the standard works on treatment state that it can only be treated symptomatically. The results of symptomatic treatment were very poor. Though observations vary, I believe a conservative estimate is that approximately 10% of the cases proved fatal. It is noteworthy to state here that in the fatal cases about 50% had a very definite pneumonia. In making the statement a "very definite pneumonia," I have done so to bring out a point for further observation. In the series of sixty cases which have been observed, 65% revealed pulmonary findings if the disease had been present for ten days. This, I believe, is very plausible inasmuch as tularemia is a definite septicemia.

Until 1928, when I first used metaphen intravenously, iodides, mercurochrome and neoarsphenamine were tried. To me they altered the course very little except in three cases where iodides were used. In these three cases adenopathy did not last longer than two months.

I have not used quinine, which, according to Shelton, is beneficial, neither have I tried transfusion as first advocated by Alexander Bates of Louisville. One case was treated according to H. L. Baer, that is, by giving x-ray therapy: ½ unit unfiltered to the site of the ulcer. The patient stated the following day that the discomfort was much less at the site of the ulcer but inasmuch as metaphen was used in this case I can draw no conclusion.

Dr. Lee Foshay of the University of Cincinnati, in 1934, published his first report on the use of serum which he prepared from goats. The results obtained were far superior to any previous method of treatment. The duration of the disease was lessened from five to three months, the adenopathy from four to two and one-half months. The duration of the fever was unchanged and averaged approximately 26 days. However, after twenty-four hours the patient was very much relieved from the severe general aching and a sufficient drop in temperature was present to make the individual fairly comfortabe.

I have not personally used the serum prepared according to Dr. Foshay though he was very kind in sending some of the first that he prepared. My only reason for not using it was that I had six cases under treatment at that time and being naturally "sold," so to speak, on metaphen, I hesitated to change.

The series of sixty cases from which my ob-

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servations were made are all from Southern Illinois where the disease is prevalent. The cases were all proven by agglutination tests.

In this series no oculoglandular type was seen. Eight were of the typhoid type, four of the glandular and the remaining forty-eight ulceroglandular. One death occurred in this series, being a typhoid type. However, I attribute this death more to a poor diagnostic acumen than to the failure of metaphen. The young man who had this typhoid form was very religiously treated seven days for malaria; when metaphen was eventually used he improved slightly for four days.

In treating these cases I have given metaphen as follows: Mild cases—10 ccs of the 1-1000 solution intravenously every other day for three injections. In the more severe cases 10 ccs daily for four doses, then every other day for three more. In no case has more than 70 ccs of the solution been given. I, however, have no reason to believe that larger doses cannot be given in tularemia because in streptococcic infections I have used as much as 100 ccs in seven days without any noticeable harm, the urine being examined daily for any apparent kidney damage.

No general reactions were noted following its use, only one patient complained of discomfort at the time of injection. His description of the pain was almost identical to that given by patients when certain preparations are injected for intravenous urography.

Phlebitis almost invariably occurred at the site of injection. This is at times fairly painful for almost forty-eight hours. In some cases the same vein was injected four or five times but no permanent occlusion was noted.

The results of the series were as follows:

Mortality rate 1.7%.

Duration of fever not in any case exceeding ten days after treatment was begun except in one typhoid form where it persisted for 13 days. The average length of fever before and during treatment was eleven days.

The longest any adenopathy persisted was five weeks and the average was twenty-four days.

Duration of the disease, that is taking the time at which the individual was able to return to his former occupation without any discomfort averaged thirty-two days. The longest any patient remained away from work was seven weeks.

No glands were incised or excised.

After about four days the patients were much improved and analyses were discontinued.

The lesion, even if fairly large, was practically healed in two weeks.

CONCLUSIONS

1. Metaphen intravenously in a dilution of 1-1000 has been effective in the treatment of tularemia.

2. It has been without harmful results in the doses used and produced no general reaction.

3. Duration of fever was lessened to an average of eleven days.

4. Adenopathy has not averaged over twenty-four days.

5. Duration of disease averaged only thirty-two days.

6. No glands required incision.

7. Mortality 1.7%.

DISCUSSION

Dr. Samuel E. Munson, Springfield: I think that it is very important that Dr. Barthelme brought this paper to our attention in view of the fact that this is one of the newer diseases of the fever type that before we did not recognize. I think it is important that we should be tularemia-minded; in other words, if we do not keep it in mind in this area where the sources of infection are present all the time we may be overlooking the disease and losing an opportunity of probably saving many lives and preventing permanent disability.

As I had learned that Dr. Barthelme's paper dealt largely with the new treatment of tularemia and with the report of the large number of cases treated by a new remedy, I thought it necessary briefly to refresh our knowledge of tularemia with the early observations that brought about a knowledge of this, until a few years ago, entirely new disease. Martin, in correspondence in 1907, undoubtedly called attention to cases in Arizona, one of which in 1925 still showed the agglutinins for bacterium tularense in his blood. Wherry first isolated the bacterium occurring in an ophthalmic practice of Vail in 1914 and found the same organism in two rabbits found dead in nature. The identity of the human disease was recognized bacteriologically in the human being in 1919 in Utah, as deerfly fever and as the disease found in the plague-like disease of rodents occurring in California. McCoy and Chapin first discovered the causative organism, bacterium tularense, and in 1912 reported complement fixation and agglutination of the organisms by two human sera in their laboratory. Francis in 1919 recognized the bacteriologic identity of the human disease known in Utah as deerfly fever and the plague-like disease of rodents occurring in California and named the disease tularemia. The reports that are gradually increasing indicate that tularemia is probably worldwide in distribution. The in-

dependent investigation by O'Hara in Japan is now known to be tularemia.

Laboratory workers have acquired the disease in England and in 1928-29 over one thousand were recognized in the Union of Soviet Republics before laboratory workers paid the toll for their investigations, thus bringing the total number of laboratory infections to 24.

It has been demonstrated in Norway and Sweden, also in Ontario and British Columbia, that bacterium tularense is found in the snowshoe rabbit. A new source was discovered in the water-vole of Europe, which is hunted for its valuable fur. Wild rabbits no doubt constitute the most important reservoir of infection for other animals and man. New animal hosts and insect vectors have been discovered.

The addition of new sources of animal life and insects would indicate an increase in the instances of the disease in human beings.

Simpson has recently reported a case of oculoglandular type resulting in a man with contact with a woodchuck or groundhog; also from the skinning of possums, muskrats and fox squirrel. It is proven that the disease may be transmitted to domestic rabbits. McCoy and Chapin in studying the plague-like disease of rodents in California in 1911, attempted to infect five sheep with emulsions of spleen from guinea pigs which had died of the infection three of which were infected and two died.

In 1923 Public Health Service of Hamilton, Montana, learned of heavy losses of sheep in Montana and Idaho. These sheep were known to be heavily infested with wood ticks. Parker, associated with Francis and Spencer, demonstrated that the wood tick was a common host and transmitter of tularemia. Guinea pigs were injected with the blood of ticks removed from sick sheep. The ticks had fed on rabbits infected with tularemia. Ticks are capable of harboring the organism throughout the winter, as the eggs are known to be infected, and by transmitting the infection to the new tick are capable of infecting animal life in the spring.

The disease can be transmitted by contamination of the hands with the tissues of the crushed infected tick or with thick excrement while shearing or skinning sheep. Cases have been reported contracted by direct contact with the tissues of the hides of sheep.

The ulceroglandular type was transmitted to man by being bitten by a coyote pup. Three coyote pups were fed tissues of guinea pigs and Belgian rabbits just dead of tularemia and died in 13, 22 and 53 days respectively.

Further investigations have shown the following animals not to be susceptible to the disease: horse, cow, hog, fox, pigeon, domestic chicken and turkey. Grouse and partridge have been shown to have a high degree of susceptibility to the infection. The disease has been found, postmortem, in the lungs of human beings similar to the lesions in acutely fatal cases in the lymph nodes, spleen and liver.

According to the literature the death rate is about 4 to 7%.

In order that a high percentage of cases be recognized, physicians should be constantly tularemia-minded, particularly in localities where the disease is known to exist.

Some of the important points in the diagnostic establishment are the history of contact with wild rabbits, followed in two or three days by a development of an indolent ulcer, particularly at the site of any injury. Also the recognition of adenopathy in the region of the site first noticed, with involvement of the adjacent and deep glands.

The onset of the symptoms are flu-like in character and present evidence of tularemia.

The most common errors in diagnosis are the presumption of streptococcus or typhoid infection with these symptoms.

The symptoms manifested are headache, vomiting, chills, aching body pains, prostration, fever.

Francis, in his studies of 189 cases, reported three clinical types: 1. Ulceroglandular, the primary lesion being a papule and later an ulcer of the skin accompanied by enlargement of the regional lymph glands; 2. oculoglandular, the primary lesion being conjunctivitis, accompanied by enlargement of the lymph glands; 3. typhoidal, there being no lesion and no enlargement of the lymph glands. Out of 151 cases, 18 were of the oculoglandular type; 16 had skinned or dressed wild rabbits and two cases reported that they had removed foreign bodies from their eyes with their fingers while pulling ticks from horses. Of the 20 cases of typhoidal type, 18 were laboratory workers who had held infected rabbits or guinea pigs or handled infected ticks, or had helped with the necropsies of infected guinea pigs, rabbits or white mice.

Serum aggluntinins of tularemia will occasionally cross the agglutinins of brucella abortus, and thus the disease has been confused with undulant fever. The high titer reached by tularemia agglutinins will leave little doubt as to the diagnosis. The agglutinins appear some time during the second week of the sickness. It is useless to collect the blood during the first week or ten days. At the end of the first year the titer may reach 1:160, when acute 1:1280. One attack of the disease confers permanent immunity.

Foshay, of the Cincinnati General Hospital, developed an antiserum in 1930 and first used it clinically in November, 1931. Since that time all patients who have needed special therapy have used this antiserum where it is available. Since 1932, with the aid of O'Neill, he developed an antitularense horse serum which is equally potent as the goat serum, but has produced more serum sickness, the proportion being 40:60. In summing up the treatment with serum, Foshay states that the duration of the disease has been shortened by 50% and the duration of the disability by 50% with the duration of adenopathies 40%, the duration of fever not definitely altered; the bed-ridden or hospitalization time was lowered to 21 days and the incidence of suppurative adenitis cut to 45%. The mean duration of primary lesion was 32 days. Serum has been given from the first to the fourteenth day. The average time of injection is the 28th day of the disease.

In the treatment of 47 patients on or before the twelfth day, the incidence of suppuration of nodes was

38%, and the hospitalization and fever period was shortened to 20 days. This demonstrated that the earlier treated the better and the shorter the convalescent period. The optimal time for the serum therapy is before the twelfth day of the disease.

(Discussion Continued on Adv. Page 30)

RADIUM THERAPY OF CANCER OF THE ORAL CAVITY

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"The problem of malignant disease is essentially one of cell metabolism. The malignant cell possesses the power of inexhaustible proliferation; its permeability to water and electrolytes is increased; the potassium content is raised and the calcium content lowered; the amount of cholesterin and phospholipins is altered. Fermentation leads to the production of lactic acid instead of glucose combustion and all cell activities have a direct dependence on or relation to the electronic state. In respect to the electronic state, malignant cells differ from the normal. The stability of the malignant cell is diminished and its electronic state can be more easily modified. Irradiation brings about a shifting of the electrons and this effect is probably the basis of all radium and x-ray therapy."

This excellent, brief statement made by Dr. H. B. Stallard of the characteristics of the malignant cell provides an explanation for the effect of irradiation and also provides the reasons for the limitations of irradiation therapy.

Radiation sensitivity depends upon factors such as the nature of the cells composing the malignant neoplasm, their metabolic rate, their degree and stage of mitosis, the stability of cell cytoplasm, the activity of cell ferments, the degree of vascularization, and the reaction of the surrounding tissues of the tumor bed. Sepsis apparently reduces radiation sensitivity. Inadequate irradiation increases the resistance of the cells to subsequent irradiation or, more likely, the cells remaining following inadequate irradiation are those which were originally more resistant. The stroma, blood and lymph supply is materially reduced by irradiation and for these reasons subsequent treatment produces a less favorable response.

This theory is now new. It has been well expressed by Dr. G. T. Pack, who states:

"It is definitely established that the cell during its course of existence passes through alternating phases of radiosensitivity and radioresistance. The cells are particularly radioresistant when for a long time they have been in a state of repose or rest. They are most sensitive to the action of radium or x-ray when they have been in a state of mitosis or indirect cell division. On account of the double alternating phenomenon of cell reproductive activity Regaud reasons that a short irradiation will destroy only those cells which at the moment are in a state of their maximal radiosensitivity. It spares others. On the contrary a longer irradiation for several days destroys all the mother cells successively, because, as the cycle of cellular renovation continues, each cell passes at some time into the phase of maximal sensitivity."

The selective action of gamma rays regularly causes complete local disappearance of some types of malignant tumors without causing any appreciable damage to normal tissues. In utilizing the selective action of gamma rays, it is probable that the state of mitosis is of prime importance. It is clinically and empirically apparent that small intensities of irradiation are effective at certain stages and in certain types, notably those cells undergoing rapid division. The period of irradiation should extend beyond the time of mitosis of the particular tumor cell. Our experience has indicated that irradiation beyond 12 to 14 days is less effective than irradiation up to 12 to 14 days. The reason for this decreased response is not known but is believed to be due in part to the decrease of the blood and lymph supply in the tumor bed as the result of radiation fibrosis. The mathematical probabilities of destroying a malignant cell are, therefore, markedly increased by having radiation continuously present in the tumor in malignancy lethal amounts during actual mitosis. Clinically this has been our experience and we feel that low intensities over a period of days are more effective.

Dosage expressed in milligram or millicurie hours alone is incomplete and inaccurate. We have attempted to express dosage in terms of milligram or millicurie hours per unit of tumor volume. Dosages do not directly follow the increase of tumor volume but decrease slightly as the tumor size increases, probably due to cross-irradiation from multiple sources. More accurate estimation of tumor dosage is desirable and has made more accurate measurement of the size of the tumor necessary. Of the fundamental methods of physical diagnosis inspection alone has been used too often in the mouth. Palpation has been neglected and consequently the extent of the induration beyond the ulceration has been underestimated.

Because of the relatively short distances at

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which radium is used exact physical ionization measurements are impractical. Consequently, we must rely on clinical measurements of dosage. From physical measurements we know that 1.0 millicurie of radon delivers approximately 133 millicurie hours of irradiation during its period of decay. We agree with other workers that 1.0 millicurie of radon during its period of decay delivers the equivalent of approximately 6 erythema doses to 1.0 cubic centimeter of tumor or to a point 0.5 centimeter from the source. Inasmuch as the terminal portion of the decay period of radon is of very low intensity, for practical purposes 120 millicurie hours of gamma irradiation may be considered 6 erythema doses. This amount of irradiation may be delivered by 10 milligrams of radium element in 12 hours or by 1.0 milligram radium in 120 hours. The effects are not quite equivalent as there is appreciable recovery from the initial radiation effect in 120 hours. Clinical experience teaches us that from 6 to 10 erythema doses of gamma irradiation are required for the complete destruction of most squamous cell carcinomata. From a given source the intensity of gamma irradiation is almost inversely proportional to the square of the distance from the source. The standard is given as "the minimum effective intensity which is produced at the surface of a sphere 1.0 centimeter in diameter by 1.0 milligram of radium placed at its center." For practical purposes but not for actual measurement gamma irradiation as used interstitially or in contact may be considered as coming from a line source corresponding to the length of the radium or radon container and effective for a distance of about 0.5 centimeter. 120 to 200 milligram or millicurie hours of gamma irradiation will deliver approximately 6 to 10 skin erythema doses.

Preliminary external irradiation in all oral cavity lesions is of utmost importance. Two erythema doses are usually given, either by means of radium pack or 1400 r units of x-radiation from 200 KV over a period of 4 to 6 days. Following this treatment inflammatory changes, which are always present, appear to subside. It is felt that the changing of a progressive lesion to a regressive one produces a condition more favorable for interstitial treatment.

With the exception of a few locations, such as the alveolar ridge, interstitial irradiation is the method of choice for the treatment of oral cancer. Ordinarily these lesions are more than 0.3 centimeter thick and surface or contact irradiation has insufficient penetrating power to thoroughly eradicate them. Furthermore, because of the inverse square law we are able to deliver irradiation directly into the tumor area and less irradiation to the surrounding tissues. Radium element, either in the form of needles or implants, has the advantage over radon in that there is a constant intensity of irradiation.

We ordinarily use radium needles of low linear intensity; 0.5 to 1.0 milligram per linear centimeter. They are screened with 0.5 millimeter of platinum, thus allowing the use of only the pure gamma rays. Needles with as great an active length as is practical are more desirable in order to insure uniform distribution of the irradiation. The needles are spaced accurately about 10 to 12 millimeters apart throughout the involved area. The period of application varies from 4 to 12 days continuously, depending upon the location, extent, and probable histology of the primary tumor.

In certain locations radon implants are more practical and allow greater flexibility of technique. The disadvantages of unscreened radon implants have been overcome by the use of 0.3 and 0.5 millimeter gold screen. In general 1.0 to 1.5 millicuries of radon per cubic centimeter of tumor have been found to be effective for complete destruction. The dosage tables reported by Drs. Martin, Quimby and Pack have been found effective and invaluable. The accurate distribution of radon in small implants requires great care and is more difficult than the spacing of radium needles.

A normal reaction is characterized by an appreciable change in the lesion about ten days following treatment. The lesion will have become flattened and for a variable distance of 1.0 to 2.0 centimeters around it the mucosa will be covered by an adherent greenish-yellow fibrinous deposit. The induration will be decreased and the maximum reaction will be apparent between the 14th to 18th day. In 6 to 8 weeks there will be little or no trace of the original lesion and mobility will have returned almost to normal. Necrosis of the bone sometimes occurs when a lesion lies over or near bone. The malignant ulceration usually allows infection to invade bone and sequestration naturally follows. Direct extension into bone by squamous cell lesions of the

oral mucosa is extremely uncommon. If direct extension occurs, irradiation does not offer a favorable prognosis.

An abnormal reaction is produced either by under- or over-treatment of the lesion. Under-treatment is characterized by persistent induration although the ulceration may have disappeared. Over-treatment in mild degrees is marked by the persistence of fibrinous deposit. Gross degrees of over-treatment produce ulceration and the surrounding tissues often become edematous and of "woody induration." A tough adherent green slough may remain over the base of the ulcer. Occasionally second treatments are administered after the tumor seems to be incompletely destroyed by the first irradiation. Thus the tumor is over-irradiated and may lead to radium necrosis, which often presents a difficult problem. The condition becomes accentuated by over-treatment and the indolent ulcer which is extremely tender and painful may take from 8 to 12 months to heal. A depressed scar may result causing retraction of surrounding tissues and if in the tongue, there may be limitation of mobility. It is usually best to wait at least 12 weeks before instituting second treatment unless the lesion is positively progressing.

In cancer of the tongue radon is preferred because the presence of needles in such a more or less constantly moving organ produces considerable pain and discomfort. The presence of small foreign bodies in such a highly vascular organ seldom causes any difficulty.

Floor of the mouth lesions are satisfactorily treated with radium element needles in the anterior third of the mouth. In this location the lesion may be very superficial and less than 1.0 centimeter thick. In such instances contact irradiation is satisfactorily used by means of low content platinum screened containers imbedded in modeling compound. Radon implants are more adaptable in the posterior two-thirds of the mouth, particularly as the tongue is usually involved.

Lesions of the alveolar ridge and hard palate are treated by contact irradiation. Because the lesions in this location are usually thin and in close contact with bone interstitial irradiation is usually unnecessary and is contraindicated. Special molds, constructed of dental modeling compound in such a manner as to conform to the area of treatment and imbedded with low content platinum screened radium containers, are preferable. These applicators are designed for 4 to 5 day applications. Opposing structures are displaced from the radium by an additional thickness of modeling compound. The distance as a means of protection is more effective than 1.0 millimeter of lead which absorbs only 4% of gamma irradiation. The molds may be removed during meals. A two-tailed mandibular bandage retains the applicator in position easily and accurately, especially during the night. Removal of carious teeth should usually be delayed until after the control of the primary lesion, unless the lesion extends along the alveolar ridge between the teeth.

Soft palate lesions present difficulties in treatment because of the slight amount of tissue and the sensitivity prevents the use of the contact mold. Removable needles are usually preferred although radon is often satisfactory.

Lesions of the tonsil and fauces are preferably treated by radon following preliminary external irradiation. Malignancies in this location are frequently undifferentiated cells and are highly sensitive to radiation.

Lip lesions involving two-thirds or more of the lip are less satisfactorily treated as plastic repair is usually desirable after control of the primary lesion. Extensive destruction has usually taken place in large lesions and constitutes a disability. Skin grafting is less successful after radium therapy because of reduced blood and lymph circulation produced by radiation fibrosis. In patients of advanced years or where surgery is constitutionally contraindicated, interstitial radium is effective. Small lesions are effectively treated by the use of interstitial removable radium needles. The gold of the radon seeds is less well tolerated in the lip than in the tongue.

Buccal mucosa lesions are effectively destroyed by removable radium needles. Small islands of incomplete destruction or local recurrences are well treated with radon implants.

In our experience submaxillary and cervical node involvement may occur following treatment of the primary lesion without recurrence at the primary site, whether prophylactic neck irradiation has been given or not. As has already been stated 6 to 10 skin erythema doses are usually necessary for the complete destruction of a primary lesion of the oral cavity and since the tolerance of the skin of the neck is about 2.5

to 3.0 skin erythema doses, it is not usual that a cervical node can be completely destroyed by external irradiation alone. This has been our experience. However, because of the possibility that an occasional individual lesion may be radiation sensitive, neck radiation is usually given, whether glands are palpable or not. When glands are palpable and operable and when the constitutional condition of the patient warrants surgery, block dissection of the glands of the neck is done. Any questionable incomplete removal of the glands is then given interstitial irradiation. Interstitial irradiation of inoperable glands, those which are fixed, infiltrating and usually invading the carotid sheath, has not been entirely satisfactory. External irradiation alone seems to be palliative and inhibitory in effect. Methods for the complete control and destruction of neck metastases are still to be developed.

The remarks made in this paper have been confined to statements regarding our attempts to completely control and destroy malignancy in the oral cavity. The many valuable surgical and radiation measures for palliation and inhibition of malignancy have not been discussed. The experience in our Clinic has substantiated the statements made by other Clinics that the combined efforts of the pathologist, the surgeon and the radiologist are necessary for the successful treatment of malignancy of the oral cavity.

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DISCUSSION

E. G. C. Williams (Danville, Ill.): I did not have an opportunity to review the Doctor's paper previous to the opening of the meeting, so I cannot go into details but shall cover just a few points. I believe the Doctor's last statement that the future and the hope in this work is the cooperation of the surgeon, the pathologist and the radiologist is well taken. Without that we are not going to make much progress.

I shall pick a few statements at random. One is that inflammation increases the resistance to irradiation. We will find that right along and do not know whether these cells naturally become toughened to all irritants, due to their reaction to inflammation, but the fact exists that with inflammatory masses they are more resistant than otherwise.

It is a difficult matter to keep the irradiation up during the time of mitosis, because it would be difficult to suppose that all the cells of the mass are undergoing mitosis at the same time. So it is only by covering periods that would include mitosis of the greater bulk of the cells that one could hope to accomplish a mytotic cycle of irradiation.

For Dr. Davis or any one using radium to give dosage to another person is extremely difficult, because, as yet, we have no absolute method of measuring dosage such as the roentgen unit used with x-ray, and it again emphasizes the idea that it is only through definite experience that a man is really in position to be estimating dosage for himself. This is just one more point of objection to the indiscriminate renting of radium. So far, of course, the program is young. But we hear thus far the mention of use of radium and the 200,000 volt irradiation. I am not hearing much today of experiences with 400,000 and higher voltage of x-ray.

I enjoyed thoroughly the Dctor's paper and his experience.

Alexander Brunschwig (University of Chicago): In regard to the question of sensitivity during mitosis, there is appearing in the biologic literature now or will appear, I understand, work in which it is shown that colchicum, which has been used for many years to treat gout, is capable in the animal of stopping a cell in the metaphase of mitosis for a period of twelve hours, more or less. If that is so and if that can be carried over into the higher animals, we might have some way of having more cells in the mitotic phase at any given time by the use of this drug. I do not know whether any experiments have been done on experimental cancer.

SCARLET FEVER AND ITS COMPLICATIONS

A statistical study of 783 cases of scarlet fever in school children one year after an epidemic.

E. H. QUANDT, M. D.

ROCKFORD, ILLINOIS

"Scarlet fever, on the whole, is itself a relatively mild disease and it is chiefly through its complications that it exerts anything more than a temporary effect." This expresses the present day opinion on a common childhood disease. With this as a thesis I have undertaken to examine, one year after a severe epidemic of scarlet fever, all the school children in Rockford who had the disease during the epidemic of 1934-35, to determine what complications and sequelae developed as a result of the illness.

From September, 1934, to June, 1935, the

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Rockford City Health Department had recorded and placed in quarantine 1071 cases of scarlet fever. Of this number, 766 were recorded in children of school age. During the same period, five deaths in the city were recorded as due to scarlet fever; all of them in the school population, four children and one teacher. One additional child has since died of nephritis and its complications following scarlet fever and one child has dropped out of school because of recurrent severe attacks of pyelitis following scarlet fever. The school population consisted of 14,976 students of which 7,338 were boys and 7,638 were girls plus approximately 450 teachers. Of the students who developed scarlet fever 408 were boys and 375 were girls. This gives an incidence of scarlet fever of 5.2%; 73% of all cases occurring in children of school age.

This paper will be limited to a statistical study of the after effects of scarlet fever in a group of 783 school children. A careful physical examination was done under school conditions to determine in each case the state of nutrition, condition of the upper respiratory tract, signs of anemia, middle ear infections, condition of the eyes, and evidence of damage to the heart. No attempt was made to determine the presence or absence of kidney lesions.

The following charts and graphs indicate, at a glance, certain facts about the epidemic.

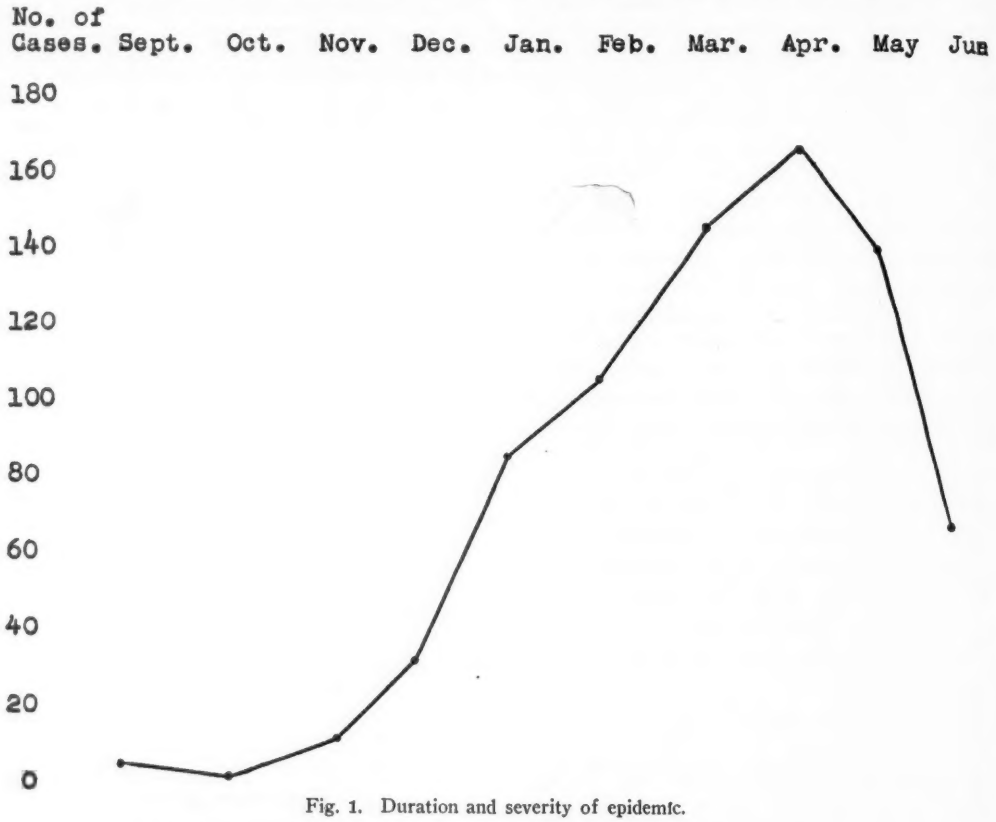

Fig. 1. Duration and severity of epidemic.

It will be noted that the epidemic started slowly in the first three months of the school year, rose rapidly to a peak in April and then subsided. The epidemic was predicted by the City Health Department, one year prior, on the basis of previous epidemics of scarlet fever recurring every seven years in this community.

The relatively low incidence in the age six group may be accounted for on the fact that these children were not in the school system during the epidemic. It will be noted from this graph that the incidence of the disease falls rapidly after the age of 12.

Of the total group of scarlet fever cases, 299,

or 37%, have had a tonsillectomy performed before or since the epidemic. Ninety-five or 12.5% revealed definite evidence of chronic infection in the tonsils. Twenty-seven or 3.5% had hypertrophied tonsils. Fifty or 6.4% had a rather marked cervical adenopathy. Five were mouth breathers with the typical adenoid facies. Eleven or 1.4% of all cases have come to wear glasses

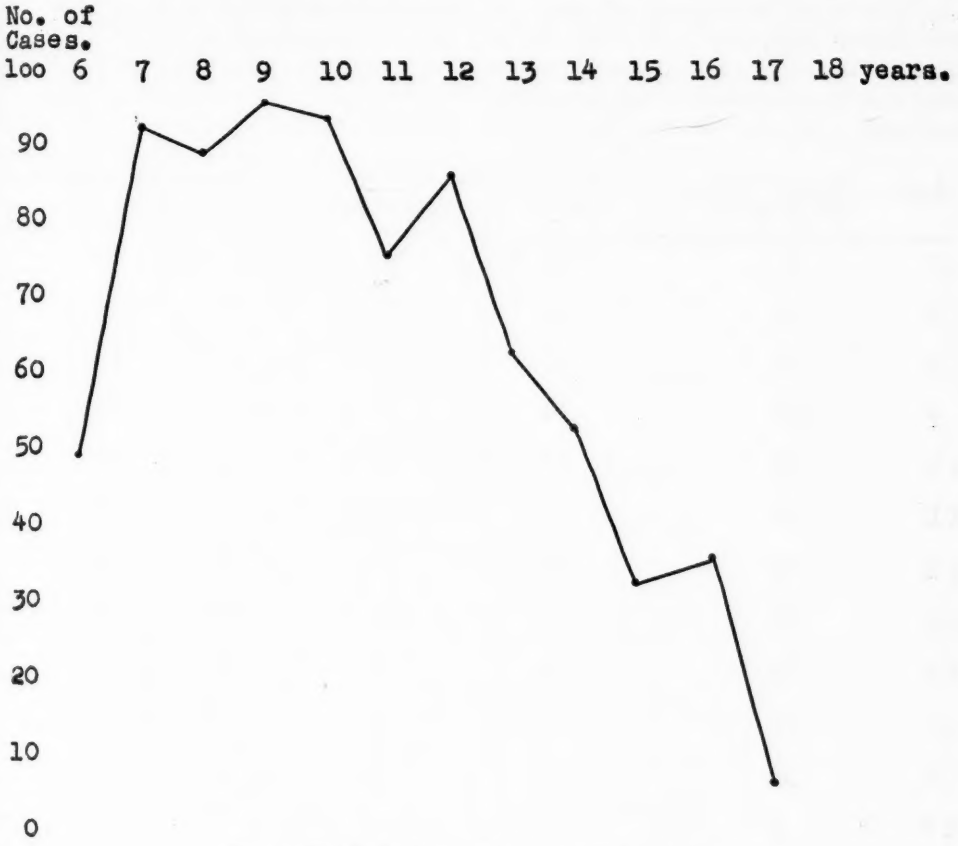

Fig. 2. Distribution of scarlet fever according to age.

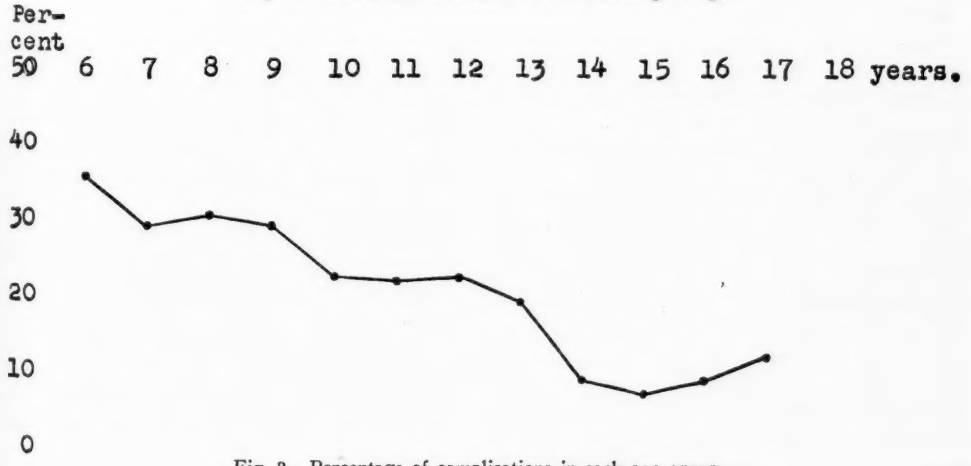

Fig. 3. Percentage of complications in each age group.

since having had scarlet fever. Thirteen or 1.6% present objective signs of secondary anemia. Twelve or 1.5% were undernourished, and an equal number had a definite nervous makeup with habit spasms, involuntary twitchings, etc. Five hundred eighty-nine or 75% had had no complications and have no sequelae. It is to be noted that the complications curve is markedly downwards as the age increases. The incidence of the disease in the older group is too small for the percentage figures to be reliable.

Abrams and Friedman show a higher incidence of otitis media in the male sex, whereas, our findings are the reverse. On the other hand, our figures agree to a slightly higher percentage of otitis media in the right as compared to the left ear. These figures also agree with Williams, that in about a third of the cases of ear complications, the disease is bilateral. This chart further reveals that 65% of the cases of otitis media occur between the ages of 6 to 10; 33% during the next five year age group and 2% after the age of 15. No cases of acute mastoiditis were recorded. Sutliff gives a total incidence of otitis media in scarlet fever as 11.3% which is closely parallel to these findings of 12%. Eleven or 11.7% of those who had acute otitis media have developed a state of chronic otorrhea, impaired hearing or both.

Age	Total Cases of Scarlet.	Total Cases with Comp. and Sequelae.		Tonsillectomized Pupils
6	50	20 cases	40 percent	10
7	94	30 "	32 "	26
8	89	30 "	34 "	26
9	100	32 "	32 "	32
10	99	23 "	23 "	28
11	75	17 "	22 "	39
12	91	22 "	24 "	36
13	62	12 "	19 "	36
14	55	4 "	7 "	35
15	28	1 "	3 "	12
16	32	2 "	6 "	16
17	8	1 "	12 "	3
Total	783	194 "	24 "	299

Fig. 4. Total complications and tonsillectomies in each age group.

SCARLET FEVER AND THE MIDDLE EAR

Age	Scarlet cases	Otitis Media	Males	Females	Rt. Ear	Lt. Ear	Bilateral
6	50	8	4	4	5	2	1
7	94	11	6	5	4	3	4
8	89	16	7	9	5	7	4
9	100	14	9	5	6	3	5
10	99	12	5	7	2	5	5
11	75	8	2	6	2	3	3
12	91	10	1	9	4	2	4
13	62	6	4	2	3	1	2
14	55	7	1	6	1	1	5
15	28	0	0	0	0	0	0
16	32	2	0	2	1	1	0
17	8	0	0	0	0	0	0
Totals	783	94	39	55	33	28	33
Percentage		12	41	59	35	30	35

Cardiac defects were found in all age groups except age 15. There were 28 cases or an incidence of heart complications following scarlet fever of 3.6 percent. Of these, 15 were found in

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girls and 13 in boys. No attempt was made to establish an accurate diagnosis of the particular lesion. Th examiner satisfied himself, however, that a definite cardiac abnormality was present, and in all cases the pulse rate was recorded after a period of rest. In 11 cases a systolic murmur was found at the apex. In 14 cases the heart sounds were markedly accentuated above normal. The pulse rates varied from 84 to 140. No blood pressure readings were taken. One case of aortic stenosis is suspected but not established. The above table records some of the objective heart findings.

O. F. Barbour School—enrollment—359

1.6 per cent. (6 children) had scarlet prior to epidemic.

11 per cent. (41 children) immunized prior to epidemic.

9 per cent. (35 children) developed scarlet during epidemic.

P. A. Peterson School—enrollment—332

13 per cent. (44 children) had scarlet prior to epidemic.

5 per cent. (16 children) immunized prior to epidemic.

14 per cent. (49 children) developed scarlet during epidemic.

Kishwaukee School—enrollment—460

OBJECTIVE FINDINGS IN THE HEART CASE

Age	Sex	Rate	Murmur	Location	Transmission	Sounds	Remarks
6	F	96	mild systolic	apex	axilla		
7	M	92	soft systolic			Accentuated	Irregular
	M	92			axilla		
	M	124	systolic	apex	axilla		
	F	128	systolic	apex		Accentuated	Irregular
8	M	120			axilla		
	M	84	systolic	apex		Accentuated	
	F	140			axilla		
9	F	126	systolic	apex		Accentuated	Irregular
10	M	140				Accentuated	
	M	96	systolic	apex	axilla		
	M	124				Accentuated	
	F	84				Accentuated	Irregular
	F	116	systolic	aortic	sternum		
11	M	112				Accentuated	
	M	100				Reduplication	Precordial activity
	F	120				Reduplication	Irregular
12	F	114				Accentuated	Precordial activity
	F	108				Accentuated	Irregular
	F	92				Accentuated	Irregular
	F	96	systolic	apex	axilla		
13	F	104				Accentuated	Irregular
14	M	90	to and fro	apex			
	M	96	systolic	apex		Accentuated	Precordial activity
	M	84				Reduplication	Irregular
	F	108				Accentuated	Irregular
16	F	120				Accentuated	Irregular
17	F	116	systolic	apex	axilla		

This figure shows the distribution of 347 defects in 194 students with complications and sequelae following scarlet fever. The middle ear was affected in 94, the heart in 28, secondary anemia in 13, nervous system in 12, nutrition in 12, and upper respiratory in 127 cases. The latter were subdivided as follows: Infected tonsils, 95; mouth breathers, 5; hypertrophied tonsils, 27; and marked cervical adenopathy, 50.

Immunity studies, made in four representative schools of the system, revealed the following interesting facts:

P. R. Walker School—enrollment—482

8 per cent. (40 children) had scarlet prior to epidemic.

20 per cent. (96 children) immunized prior to epidemic.

3 per cent. (15 children) developed scarlet during epidemic.

7 per cent. (35 children) had scarlet prior to epidemic.

8 per cent. (39 children) were immunized prior to epidemic.

16 per cent. (73 children) developed scarlet during epidemic.

No cases of scarlet fever, developing in a child immunized against the disease prior to the epidemic, has come to my attention in this study. P. R. Walker School, with 28% of the children immune prior to the epidemic, had the lowest incidence of cases.

CONCLUSIONS

A statistical study of 783 cases of scarlet fever in the school system was made one year after an epidemic.

Twenty four per cent. of all cases were found

to have developed one or more complications or sequelae.

Infections of the middle ear are the most common immediate complication.

Damage to the heart is the most common permanent complication.

The school with the highest percentage of immune children prior to the epidemic had the lowest incidence of cases.

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Miss Nellie Hanstrom, R.N., and,
Miss Helen Wray.

SOME ROENTGEN CONSIDERATIONS OF THE CHILDHOOD TYPE OF TUBERCULOSIS

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CHICAGO

The term, childhood type of tuberculosis, has been adopted by the National Tuberculosis Association to describe the diffuse or circumscribed lesions in the lungs and associated tracheobronchial lymph nodes that result from a first infection of the pulmonary tissue with the tubercle bacillus. The adult type of tuberculosis results from reinfection. If the adult escaped infection during childhood, he may develop the childhood type. The child may develop the adult type if reinfected after the immune phenomena produced by the first infection has occurred.

Chadwick,[1] McPhedran[2] and others have repeatedly stressed the importance of having a knowledge of the anatomy and physiology of the lungs as well as the pathology of tuberculosis if one is to properly interpret films of the chest of the child. In a favorable case the implantation of tubercle bacilli in the lung results in the formation of tubercles. An exudative process develops around this focus and may vary in size from that of a miliary lesion to the involvement of an entire lobe depending upon tissue sensitivity and the number and virulence of the bacilli. Central caseation occurs early with the formation of a fibrous capsule around the lesion. Later resorption occurs during which time the focus decreases in size and still later calcium or, in some instances, true bone may be deposited in the lesion. A similar sequence of events occurs almost simultaneously in the lymph nodes which drain the involved area. In the unfavorable cases the tissue reaction may be so intense that necrosis and liquefaction occurs with the formation of a cavity or the process may spread to the surrounding lung. A hematogenous dissemination may occur with the development of miliary tuberculosis, meningitis, or involvement of bones and joints. The roentgen findings will vary with the extent, severity, location and phase of the disease.

The diagnosis of the childhood type of tuberculosis depends upon a consideration and correlation of the history, symptoms, physical signs, tuberculin test, x-ray and laboratory tests. The roentgenologist should be informed of these various factors.

The history of exposure to a case of pulmonary tuberculosis is most important. The symptoms are frequently indefinite and the child may not manifest any symptoms which can be attributed to the disease. There may or may not be a loss of weight. Tuberculosis may be found in overweight, average weight, or under-weight children. There may be a loss of appetite, lassitude, horseness, cough, or irritability. Frequently no abnormality of the temperture is found.

Unless a diffuse infiltration or consolidation of the parenchyma is present, there may be no particularly abnormal physical findings. Goldberg[3] in speaking of childhood tuberculosis states that ". . . years of experience have led me to rather underestimate the importance of physical findings."

It is generally accepted that a positive reaction to the tuberculin test always means infection with tubercle bacilli. It does not necessarily indicate disease or whether it is active or latent. A negative reaction will be a great aid in ruling out questionable roentgen findings.

In most instances it is very difficult to recover tubercle bacilli in children. The sputum

From the Department of Radiology, Northwestern University Medical School. This is a brief summary in the way of a preliminary communication on work in progress at the present time.

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may be positive in those who have cavities or the pneumonic type of lesion. The gastric contents and swabbings of the pharynx and larynx may sometimes yield positive results.

The importance of a roentgen study of the chest as an aid to the diagnosis of childhood tuberculosis has been emphasized by practically all authorities. (Chadwick,[4] McPhedran[2]) Chadwick[4] states, "X-ray films are indispensable in the examination of a child's chest. Without them a conclusive diagnosis of the childhood type of tuberculosis can rarely be made." We are indebted to McPhedran[2] for a satisfactory working classification.

Most of us have probably been guilty of seeing too much in the roentgenogram of the chest at some time or other. Osler[5] once said, "More than any others, radiographers need the salutory lessons of the dead house to correct their visionary interpretations of shadows, particularly those radiating from the roots of the lungs." The excellent work of Bigler[6] based on observations at necropsy has done much to give us a correct concept of the normal. Numerous factors must be considered in the study of a chest film. Among these, one may mention the phase of respiration and of the cardiac cycle, technical factors such as target-film distance, the focal spot of the tube and proper development of the film. Technically good films are frequently very difficult to procure when one is dealing with children. Adequate films will show sharply defined hilar shadows with rather clear-cut linear or vascular markings extending into the lung fields. Bigler has stressed the fact that the normal linear markings are made up, for the greater part, of the blood in the blood vessels. Frequently these vessels run parallel with the axial ray or will curve and will produce sharply rounded or ovoid shadows which should not be misinterpreted as evidence of pathology such as calcium deposits.

Two groups of lesions are peculiar to the childhood type of tuberculosis: the parenchymal and the tracheobronchial. Both types of lesions are frequently noted in the same chest. The parenchymal lesion may occur in any part of the lung but in our experience has occurred most frequently in the lower two-thirds. These lesions may be either circumscribed or diffuse. The diffuse lesions may become very extensive involving a part of, or an entire lobe and have the appearance of pneumonia. The term epituberculosis has been applied to these diffuse lesions by Eliasberg and Neuland[7] and by Kolzer.[8] These pneumonic appearing lesions have been noted to come and go but usually the primary focus persists throughout the serial film study. The importance of serial films cannot be stressed too strongly. If a questionable lesion is present in the roentgenogram, a re-examination after a period of two to four weeks should be urged. After a positive diagnosis of childhood tuberculosis has been made, a roentgen study at intervals of one to three months will provide definite information as to the status of the lesion. The persistence of a parenchymal lesion in the serial films of a child's chest who has a positive tuberculin reaction is sufficient evidence to warrant a diagnosis of the childhood type of tuberculosis. The absence of any abnormal findings in the chest film of a child having a positive tuberculin reaction does not of course rule out tuberculosis. On the other hand the roentgen examination in many cases will reveal definite and often extensive lesions which are not discovered by clinical examination.

As resolution takes place the lesion becomes more discreet, smaller, and may be represented by only a small nodule often followed later by deposits of calcium and in some instances true bone. Calcium deposits which are visible in the film usually require from one to three years to develop. These deposits occur somewhat more slowly in white than in colored children. The presence of calcium deposits in the chest of the child is much more important than in the adult chest. These deposits in the lungs of children can be considered as being on a tuberculous basis in practically all cases because it occurs so rarely from other causes. While the presence of calcium may be taken as evidence of healing, it does not signify that the lesion is healed. Calcification and caseation may occur in the same focus. Many authorities consider calcifying lesions a menace up until the age of twenty years or adult life.

Normal lymph nodes do not cast shadows which can be visualized in a roentgenogram. Perceptible lesions of lymph nodes in children are usually on a tuberculous basis. These nodes may be so large that they protrude beyond the normal hilar area and are visible as rounded dense shadows outlined because of their great density as compared to the lung tissue. This finding is noted most frequently in negroes, Mexicans and In-

dians. In other cases one sees a triangular shadow with the apex extending into the lung field. Shadows of this type may be either hemogenous or have a hazy mottled appearance. Considerable care must be exercised in the interpretation of hilar shadows. Blood vessels which run parallel with the axial ray cast shadows which have the density of calcium. These vascular shadows have a rounded, smooth contour while calcium deposits are prone to have rough, irregular contours. Movement accounts for most of the diffuse, ill-defined, broadened and blunted hilar shadows. Either active or previous infections may alter the normal hilar appearance. Loss of the usual clear space between the right hilum and the right border of the heart mentioned by Baum[9] is important in determining the presence of hilar pathology. If paratracheal glands are involved there will often be widening of the mediastinum either unilaterally or bilaterally. The borders may be perfectly smooth or nodular, and may be either straight or bulging.

The density of the shadows cast by these diseased nodes will be increased considerably as calcification takes place. The recognition of calcium deposits in the lymph nodes as in the lung, is very important in the child.

The tracheobronchial lymph node involvement may be so extensive that there will be sufficient extrinsic pressure on the bronchus to produce atelectasis of a part or of an entire lobe. In other instances the obstruction of the bronchus may not be complete and obstructive emphysema will occur. Faust[10] and others have reported cases of this type.

Pleural effusion is not uncommon in children and if no other cause is known, it probably should be considered to be on a tuberculous basis. The roentgen findings are usually characteristic and not unlike those noted in the adult.

CONCLUSIONS:

1. The proper interpretation of a roentgenogram of the chest of a child having tuberculosis requires a knowledge of the pathology as well as of the anatomy and physiology of the lung.

2. A roentgen study of the chest is indispensable in the examination of a child suspected of having tuberculosis.

3. The physician who interprets the films should have or be given a statement regarding the history, physical findings and the result of the tuberculin test if available.

4. Serial films will yield more definite information than a single examination and will help to rule out non-tuberculous lesions.

5. Two types of lesion should be looked for: the parenchymal and the tracheobronchial. Pleural effusion, atelectasis, and obstructive emphysema will be found in some instances.

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DISCUSSION

Paul Holinger (University of Illinois, Chicago): This paper has been extremely interesting to me because of the phases of bronchial obstruction which were discussed. Especially the last case, in which definite bronchoscopic findings were noted.

I should like to mention a case which falls into the scope of this paper, and is somewhat similar to the last case Dr. Barth described. A child two years of age who had Pott's disease developed atelectasis of the right lower and middle lobes. She was placed on a Bradford frame and bronchoscoped in spite of the Pott's disease.

The right bronchus was found to be filled with granulation tissue and pus. The tissue contained tubercles and the secretion contained the bacilli. Thus, it was proven that the atelectasis was caused by tuberculous granulation tissue, a rather uncommon cause of bronchial obstruction in children, which roentgenologically cannot be distinguished from bronchial obstruction caused by extrabronchial compression.

THREE INTERESTING INTRAOCULAR TUMORS (MALIGNANT MELANOMATA)

M. L. OSTROM, M. D.
ROCK ISLAND, ILL.

This study has been unusually interesting to myself and my associate, my father. The three cases to be presented were undergoing care at the same time, and a rare opportunity for discussion, comparison and study was thus made possible to us. Before entering the discussion, it would be well to state that the time allotted will not permit a lengthy discussion of the subject to be reviewed, hence an attempt will be made to condense the subject matter to a minimum. Reviewing briefly the salient features apropos tumors of the uveal tract we find:

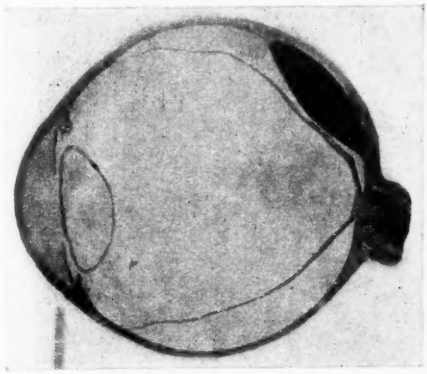

Fig. 1a. Case 1. Melanosarcoma. Spindle cell, subtype B, choroid.

Most intraocular tumors are malignant;[1] however, from a survey of ophthalmic literature,[2] benign melanomas are much more common than it appears. On histological investigation of eyes with and without sarcomas, it was found that five separate melanomas occurred in fifty sarcomatous eyes and twelve melanomas occurred in fifty non-sarcomatous eyes.[3] Norman quotes Castresanas (Siglo Medico, Madrid) incidence of intraocular melanomata as being one to 20,000 primary eye cases and Gifner (Pathologist at Mayo clinic) 1:25,000 primary eye cases. It is interesting sidelight to have the statistics of the Mayo Clinic reveal 1:152,651 run of the mill patients affected with melanosarcoma an incidence of approximately 1/100 of 1%.

Primary malignant melanoma or so-called sarcoma of the uveal tract is rare. According to Fuchs, 6% of all malignant melanomata involving the uveal tract are found in the iris; 9% are found in the ciliary body and 85% in the choroid.[5] Concerning the site of preference of the tumor Francois[6] found a preference in the iris.

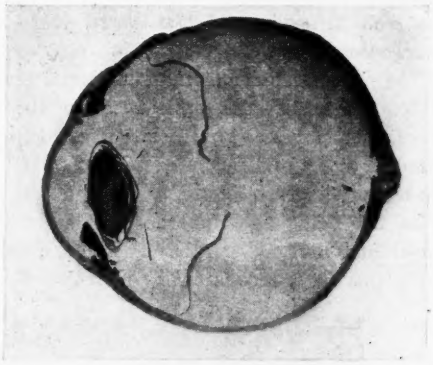

Fig. 2a. Case 2. Malignant melanoma. Spindle cell, subtype B, iris. Secondary glaucoma.

It is generally agreed when a tumor is seen in the vitreous chamber of a human eye, the eye should be removed.[7] Fuchs[8] states: "Eyes which contain a new growth, or which are both blind and painful, require enucleation." Hardy & Hardy[9] conclude that the more anterior the growth, the better the prognosis; however, Samuels[14] concludes that "tumors that reach the angle are particularly dangerous to life because of their tendency to invade Schlemm's canal and the anterior ciliary vessels. The original classification of melanomata by cell type, based on H & E staining still holds,[10] but a more accurate prognosis is made possible by additional classification according to fibre content. An

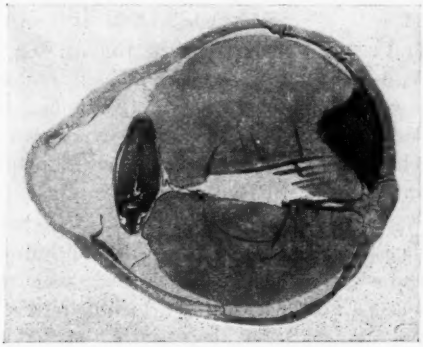

Fig. 3a. Case 3. Malignant melanoma of the choroid, mixed cell, subtype A and B. Detachment of the retina. Secondary glaucoma. Recent intraocular hemorrhage.

Read before Section of Eye, Ear, Nose and Throat, Illinois State Medical Society, Peoria, May 19, 1937.

abundance of fibre production indicates a more favorable prognosis and a decrease in fibre production denotes an increase in malignancy.[11] The prognosis as regards life is grave. In the great majority of cases, the patient with metastases succumbs to their effects within three years from the date of enucleation of the eye.[12] VonHipple has seen metastases as late as 18 years after enucleation.

The diagnosis of tumors of the uveal tract is seldom made without difficulty. In the first place, four stages of growth are distinctly recognized [1, 15, 16], each stage presenting difficulties characteristic of itself.

In the first stage, the tumor grows without apparent irritation. In the 2nd stage, a secondary glaucoma is recognized by increased tension.

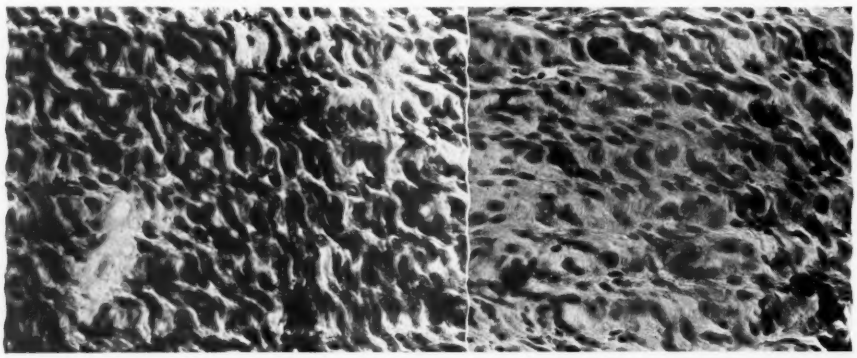

Fig. 1b. Case 1. High power.

Fig. 2b. Case 2. High power.

In the 3rd stage, there is a continual growth of the tumor and rupture of the globe. In the 4th stage, the growth becomes extra-bulbar and there is an increased opportunity for metastases.

In the early case the retina lies in contact with the tumor so that with an ophthalmoscope a sharply defined detachment of the retina is found rising steeply from the fundus. Through this detachment we can occasionally recognize the yellow or brown color of the tumor. Occasionally a red border of the tumor mass presents itself next to the optic nerve due the engorgement of the choroidal vessels. If a tumor should arise in the ciliary body or near it, it may be difficult to see although easy to transluminate.[1] Cataract, exudative choroiditis, hemorrhagic glaucoma, corneal scars, detached retina, etc. render an accurate diagnosis is the first stage extremely difficult and in the second stage, frequently impossible by the means at our disposal. A significant early sign is the perception of a spot in the field of vision, particularly if yellowish.[17] The mapping of this scotoma may locate the sight of a tumor still ophthalmoscopically invisible. A progressive hypermetropia of from 1 to 4 diopeters may develop, and there may be a localized edema of the retina, plus some increase in intraocular tension and a poor discrimination for green. Rönne,[20] diagnosed two cases out of eight by transilumination and suggests the possibility of a test for increased albumin in the aqueous which would be valuable if a technic could be developed. Samuels describes characteristic signs of necrotic malignancy as follows: "Chocolate colored content of anterior chamber, chemoses of conjunctiva and lid. . . . To the pain and vomiting of glaucoma is added the pain of scleritis, appearing with great suddenness in an eye that has been blind for sometime." A pathetic note is struck when one considers the number of cases of intraocular tumor that are discovered after enucleation of the globe.[19, 20]

The differential diagnosis of tumors of the uveal tract is even more difficult than the diagnosis. Hemorrhagic glaucoma, tuberculous involvement (eg. conglomerate tubercle), syphilis, cysts, detached retina, benign melanoma, nevus, subchororidal hemorrhage,[21] metastatic sarcoma of choroid,[22, 26] exudiative choroiditis, phthisis bulbi,[19, 27] naevo carcinoma,[23] malignant leiomyoma,[24] true nevus,[20] a type of benign melanotic tumor of ectodermal origin,[25] encapsulated foreign bodies, congenital nevi, glioma and secondary tumors as carcinoma, are all worthy of consideration in the differential diagnosis. Benedict reporting on a series of 138 cases of melano ephithelioma of the eye, eye lids and orbit encountered at the Mayo clinic from June, 1917, to July, 1936, of which 108 were intraocular tumors, 32

of them occurred in the 6th decade, 26 in the 7th, 23 in the 5th, 17 in the 4th and the others scattered through the 1st, 2nd, 3rd and 8th decades of life.[26]

Lane[27] found most malignant involvements of the eye and adnexa included in a group largely made up of those in sedentary occupations, most of which are indoor occupations, without much exposure to sunlight or to known cancer irritants.

Concerning racial predisposition, Herold[32] in reviewing the literature found 3 cases of malignant melanoma of the eye in the negro up to Oct. 1, 1936, and to quote Bishop,[33] "apparently very few melanomas have been seen in the eye of the negro, Lister reported a case and there is one in the series to be reported in the present paper. Callender found no cases of melanoma of the eye in the negro in all eyes examined at the Army Medical Museum."

Concerning the origin of these tumors, considerable diversity of opinion exists. Collins[28] claims that the melanoblasts are both epiblastic and mesoblastic in origin. Mann[29] believes choroid is mesodermal in origin and that the choroidal pigment is not derived from the pigment layer of the retina. Benedict[30] states that "in recent years considerable doubt has been thrown on the mesodermal origin of such growth and much evidence has been produced to show that they are ectodermal in origin. Terry & Johns[34] believe these tumors should be called malignant melanomas, thereby avoiding any name indicative of origin. To conserve time, further discussion will be eliminated.

Because case 1 may be considered as typical of what one may call the "normal" growth of a malignant melanoma, we can for the moment consider it as a control.

Case 1. Adult, white male, aged 58 years. Usual diseases of childhood. Adult health has been good. No history of malignancy in family. Present complaint:—"I have had difficulty in obtaining glasses that will permit me to focus properly on anything, can't you help me out,." Ophthalmoscopic examination revealed cornea, anterior chamber and lens normal. A nodular mass was easily seen, somewhat yellowish in color and about one and one-half disc diameters in diameter and situated one-half disc diameter to the temporal side of the disc. We estimated its depth to be five to seven diopters. A reddish border was present on the disc side of the growth. The tumor mass was very sharply defined.

Diagnosis: Choroidal tumor, probably melanosarcoma. The patient was advised further consulation. He returned in a few days and the eye was enucleated under local anesthesia. Postoperative course normal. The eye was sent to the Army Medical Museum and the following report obtained:

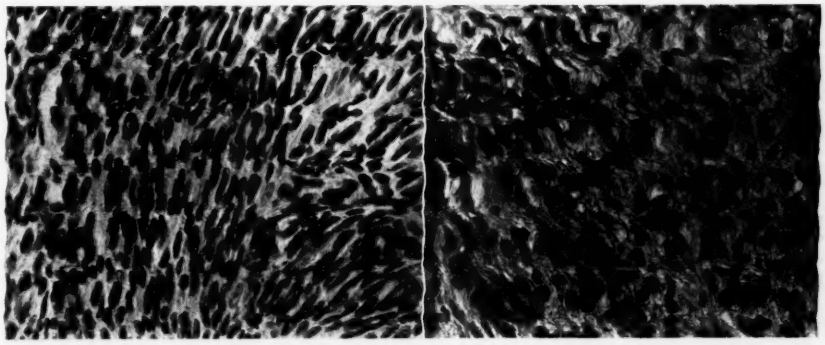

Fig. 3b. Case 3. High power. Predominance of spindle cells, subtype A.

Fig. 3c. Case 3. High power. Predominance of spindle cells, subtype B.

51681. Gross: There is a rather heavily pigmented tumor mass extending from the equator almost to the optic disc and measuring about 1.0 x 1.0 x 0.4 cm.

Microscopic: In the region of the macula there is a tumor mass about 12 mm. in diameter which has not broken through Bruch's membrane. The tumor is composed of spindle cells, some of which are heavily pigmented, but many of which are non-pigmented. The nuclei generally present prominent nucleoli. There are a moderate number of mitotic figures. There are no prominent blood spaces. By the Callender-Wilder classification, the tumor is more than 50% argyrophil fibered. Extending along a nerve that leads out from the tumor obliquely through the sclera there are tumor cells. The adjacent retina shows detachment with a subretinal serous exudate. There is some hyalinosis of the ciliary process. The iris presents a few diffusely scattered lymphocytes. The remainder of the eye is not noteworthy.

Diagnosis: Melanoma, spindle cell subtype B, chroid.

Case 2: 51621. White, female, aged 54 years.

Present complaint: Vision right eye failing gradually. Extremely painful about temple two weeks. Blind one week. Tension 80. Cornea steamy. Pupil slightly dilated but reacts to light and accommodation.

Incipient cataract. Fundus hazy, no vessels seen. Iris muddy. Slight recent hyphemia 5 to 7 o'clock in anterior chamber.

Diagnosis: Sub-acute glaucoma. Tension 90; blood pressure. 175/88. Treatment: eserine and pilocarpine. Three days later tension 90, hyphemia still present. Seven days later most of blood in anterior chamber absorbed. Cornea clear. Fundus slightly hazy, deep cupping of disc, feels better. No pain. Tension 70. Ten days later hyphemia absorbed, tension 50, feels fine. Sent to hospital for iridencleisis and iridectomy (Holth). No complications. Uneventful postoperative course. No return of vision. Patient very comfortable and had no complaints about eye. 3 years and 4 months (e.g., 40 months) later called in the office to offer greetings. No complaints. Feeling fine. Suggested that the eye be examined. The iris was found to be entirely covered with wart like proliferations similar to a description of the Friedenwald's[2] case in which "wart like growths on the iris which resemble a field of stubble or a deforested landscape where only stumps of trees remain." Fundus presented deep cupping of disc. Advised immediate enucleation. Three days later eye removed under local anesthesia. Uneventful recovery. The eye was sent to the Army Medical Museum and the following description was forwarded to our office.

Gross: The pupil is large and irregular in outline. There is a small dark spot at the limbus. The iris is definitely thickened.

Microscopic: The nuclei of the corneal substantia propria are slightly irregular. Frequently pigmented cells appear in the anterior chamber and on the edematous posterior corneal endothelium. At the angle on one side there is a scar of an iridencleisis which has left a bay lined by pigmented epithelium and continuous with the anterior chamber. The iris is greatly thickened by a tumor mass situated mostly on the anterior portion of the iris and extending forward and laterally to block the chamber and infiltrate the spaces of Fontana and areas around the canal of Schlemm. This tumor mass is made up of strands and nests of generally spindle shaped cells, many of which are slightly or heavily pigmented. The cell nuclei generally present distinct, often acidophilic nucleoli. Between the nests there is a small amount of connective tissue and sometimes many large, heavily pigmented, irregular shaped cells. The tumor cells also invade the anterior portion of the ciliary muscle. According to the Callander-Wilder classification, the tumor is less than 50% argyrophile fibered. There is cortical and nuclear degeneration of the lens. The ciliary body is atrophic. The retina shows much microcystic degeneration particularly of the rod and cone, and outer plexiform layers. There is atrophy of the ganglion cell layer; enlarged cysts in the periphery. The choroid is not remarkable. There is excavation of the optic disc which is surfaced by prominent vessels, some of which are even elevated above the surface. A few red blood cells appear in the vitreous. There is no tumorous invasion of the optic nerve as shown by independent section.

Diagnosis: Malignant melanoma, spindle cell type B, iris. Secondary glaucoma.

Case 3: Colored male, aged 64 years (apparently full blooded negro, dining car cook). Present complaint: While train was rounding a curve outside of Denver, patient lost his balance and fell forward striking corner of pie locker against right eye. Had some pain but was able to do his work until he reached the end of his run in Chicago. Two days after injury, he began to develop severe pain in the eye and family physician was called who administered morphine sulphate gr ¼ hypo. Butny colution instilled in eye every two hours. Some relief followed. Three days after injury intense pain developed in and around right eye.

Past History: Usual diseases of childhood. Hasn't seen a doctor for 30 years, except for Company's annual physical examination.

Present complaint: Intense pain in and around eye. Can't see light. Some chemosis of lid and conjunctiva, cornea steamy, some cholocate colored material in anterior chamber, iris muddy, pupil slightly irregular. Large hemorrhage completely filling posterior chamber. Fundus not seen. No light perception or projection. Pupillary reflex not present. Tension 110. Diagnosis: hemorrhagic glaucoma; enucleation advised. Right eye enucleated under local anesthesis. Postoperative course normal.

This eye was also sent to the Army Medical Museum. Two weeks later the following information was received: "Preliminary sections of the eye in the case of No. 48169 show a malignant melanoma of the choroid.

In view of the fact that melanoma is so rare in negroes, we would like very much to have a fairly complete history and some information concerning the characteristics of the patient. Is he a mulatto or a regular negro type?" . . .

Very truly yours,

Raymond O. Dart,
Maj. M. C. U. S. A., Curator.

We replied to this request stating that he was a full blooded negro, which his appearance would seem to indicate. Two months later the following report was received:

Gross: There is a small dark area in the anterior diameter visible through the cornea. Posteriorly, extending from the optic disc to midway between the disc and the equator and protruding into the eye for about 0.5 cm. is a somewhat pigmented tumor mass. There is complete cone-shaped detachment of the retina and the eye is filled with gelatinous exudate. The optic nerve is cut too short for independent section.

Microscopic: There is a moderately pigmented cone-shaped tumor arising in the choroid near the optic disc and extending midway between it and the equator. This is composed of spindle cells having small dense nuclei with evenly distributed nuclear chromatin. Only occasional cells have well developed nucleoli. There is a flat extension of the tumor along the choroid for a considerable distance beyond the main tumor mass. Small localized areas of large epithelioid type tumor cells occur in the peripheral areas of the main tumor

mass. The retina is completely detached, markedly degenerated and shows loss of retinal ganglion cells. There are small hemorrhages and numerous large fat filled or pigmented mononuclear cells in the exudate behind the detached retina. The anterior chamber is unusually deep due to keratoconus. The iris is atrophic, unusually dense, shows marked thickening of the blood vessel walls. The ciliary body is atrophic. There is marked sclerosis of the pectinate ligament and a small amount of hemorrhagic extravasation in the anterior chamber.

Diagnosis: Malignant melanoma of the choroid, mixed cell type, spindle A and B. Detachment of the retina. Secondary glaucoma. Recent intraocular hemorrhage.

The interesting features of this study have been: 1. A "control case" in which the diagnosis could be made in the first stage and which presented all signs, clearly defined, of an early intraocular tumor.

2. A case which had had previous intraocular surgery for glaucoma (iridencleises with iridotomy) performed three years before in which apparently normal iris tissue had been removed. (This could possibly have been a melanoma of the iris in the second stage of development.)

3. A melanoma of the choroid in what was apparently a full blooded negro with a history of recent severe injury to the eye in whom no previous symptoms of eye trouble could be obtained. This eye fits into the class of eyes described by Samuels,[18] in which the symptoms of necrotic malignancy were present and substantiated by the pathological report. Translumination in these cases was of no value. In two cases it wasn't necessary for diagnosis; in the third, hemorrhage in both anterior and posterior chambers totally obscured the evidence usually exhibited by the process.

4. We would like to emphasize the need of removing a long section of the nerve in every eye enucleated.

5. These patients are alive and apparently well at present, one and one-half years later.

We wish to thank the personnel of the Army Medical Museum for their suggestions and splendid cooperation in the preparation of this study.

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THE ACUTE NASAL INFECTION

Local Therapy Based on the Modern Conception of Nasal Physiology

O. E. Van Alyea, M. D.

CHICAGO

One of the first investigators of cilia in mammals was W. Sharpey[1] of London, who studied and recorded several of their outstanding characteristics. He noticed particularly their active lashing stroke with recovery, their vitality after the death of the animal to which they belong, the effect of drugs on their action, and the fact that they have a definite direction of sweeping, toward the ostium of sinuses, toward the nasopharynx in the nose, and toward the larynx in the tracheobronchial tree. Sharpey's observations were recorded exactly one hundred and two years ago. Had his work been followed up by others at that time, rhinology would now no doubt be far in advance of its present status and occupy a highly enviable position in the field of medicine. This monumental contribution was, however, followed by a long period of quiescence, interspersed only by an occasional observation of minor importance.

In 1876 Professor Bowditch[2] of Harvard, studying frogs' ciliated membrane, succeeded in estimating the immense capabilities of these structures for work. He found that each ciliated cell in one minute performs an amount of work equal to lifting its own weight to the height of 4.253 meters.

In 1895 St. Clair Thomson and Professor Hewlitt[3] produced the startling information that the normal nasal chambers are comparatively free of bacteria. This they found to be due to the propulsive action of cilia and the inhibitory action of a mucus film which ensnared the organisms, carrying them on to the nasopharynx. Rhinology again failed to realize the importance of these observations and until quite recently has ignored completely this very able defense mechanism of the nose and sinuses. Considerable research in the 1920's and more in the 1930's has at last given this subject the attention it deserves, with the result that therapy of nasal infections is undergoing considerable change. That confusion still exists, however, is shown by the wide variety of drugs in common use today. The list comprises:

1. antiseptics
2. ephedrine
3. oils
4. mild silver proteins
5. epinephrine
6. cocaine
7. bacterial lysates
8. powders
9. saline solutions

These agents are sprayed, packed and instilled into the nasal cavities and sinuses with little design or reason. For lack of a better therapeutic goal we have in the past, at the onset of a cold, directed our efforts toward combating the action of pathogenic bacteria under the assumption that the nasal mucosa was teeming with them. This form of therapy is now known to be ineffective, the antiseptics being more harmful to the host than to the microorganisms. We have flooded the nose with antiseptics of all types, maintaining the while a complacent disregard for the preservation or restoration of normal defense.

At last year's meeting of the American Medical Association, William J. Kerr,[4] speaking befor the Medical Section, ended his address with this statement: "Since it is apparent that no rational means are available to prevent or treat the common cold on the basis of the hypothesis of infectious origin, isn't it timely to go back to fundamentals and start anew?"

It is a generally accepted belief, at the present time, that the microorganisms usually associated with diseases of the upper respiratory tract have nothing whatever to do with the onset of an attack. They are secondary invaders only, coming on after the way has been paved by some other influence. The early invader is thought to be a filtrable virus which confines its activities to the initial stages of the disease. Such an agent has been described by Dochez,[5] his associates, and others,[6] both in this country and abroad. It is non-visible, non-culturable in ordinary media and does not respond to antiseptics as do the known pathogenic organisms, yet may be transmitted to human subjects and to chimpanzees and ferrets. Aside from this elusive virus, which is no doubt the activating agent, other factors assist in the development of a cold. Kerr feels that a most important factor is the individual's failure to ajust himself to sudden changes of temperature. Other items are physical fatigue, gastrointestinal disturbances, lack of sleep, indulgence in excesses of all types, worries and fears. Speisman[7] regards anxiety neurosis a highly important predisposing factor.

Whatever the cause of the initial invasion, we

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know that associated with it are marked vasomotor changes within the nose. Speisman[8] has shown that following a peripheral exposure to cold there is an immediate drop in the intranasal temperature with a noticeable ischemia of the nasal mucosa. If the individual is in a state of health, there is an almost immediate return to normal. If, however, he is below par, the effects of the chilling may remain for hours. Associated with the ischemia is a diminution of nasal secretion; the membrane lining the nose becomes dry and the cilia are slowed down or paralyzed. The protective film of mucus is gone, at least in spots, and the way is paved for an acute infection.

The early symptoms of a cold are dryness of the nose and throat, chilliness and sneezing due to a stasis of the mucous stream. Should the process continue, symptoms of toxicity follow: malaise, headache, sore spots in the throat, cough and fever. The tissues of the nose, at first dry, become engorged and there is an outpouring of a thin water secretion. The openings to the sinuses become blocked by the general swelling of the lining membrane and the structures about the opening. Further stasis occurs owing to lack of nasal and sinus ventilation. J. F. O'Malley[9] of London, who has made extensive studies on this problem, says: "Failure of the regular sequence of alternating pressure marks the first step in the onset of nasal disease. If increased respiratory efforts succeed in maintaining or restoring them, conditions of health will continue." Similar conclusions were drawn by McMurray,[10] who thinks the plus and minus changes in the nose and sinuses have considerable to do with ciliary activity. The nasal secretions in the early stage, although profuse, are lacking in antiseptic quality. This, according to the investigations of Hilding,[11] is due to the diminution of lysozyme, a ferment which is normally present in the nasal secretion.

Just what part the cold virus plays in all this is purely conjectural. Some investigators think they pass through the ducts of the goblet cells and mucus secreting glands affecting the nature of the secretion. Others think that they confine their activities to the ciliated cells. It is certain that they cannot be isolated for study and also certain that at this stage the nose is free of all culturable organisms.

Quite a common occurrence is a slight cold with recovery after one or two days. This, we may assume, is the situation wherein a cure takes place before the secondary invaders have gained a foothold. Cases of this type are reported occasionally by individuals who have been vaccinated against the ordinary pathogenic bacteria of the upper respiratory tract. Walsh[12] felt that many of the slight colds reported following the use of his nasal spray vaccine were due to the action of the initial invader only, an immunity having been established against the known bacteria. Up to the present time no antivirus has been developed which will combat the initial invader of influenza or the common cold.

A recent article by A. G. Rawlins[13] announces a new method of combating the action of this virus. It is based purely on the theory that a similar virus which attacks plants has been successfully routed by treatment with sulphur dioxide fumes. In an epidemic, the author supplied eighty patients with this remedy and sixty-six reported themselves cured the first or second day. When tried on colds of three or four days' standing it afforded no relief. This last item fits in handily with the theory that after the third day of a cold the unknown virus ceases activity and the infection is carried on by the known bacteria.

It has been shown how failure of the mucociliary defense mechanism permits inflammatory organisms to gain entrance into the tissues. Stained sections have revealed their presence scattered throughout the superficial layers of the nasal mucosa and colony formations at the base of the cilia.

Such an invasion calls for the support of further defense and this is found in the submucosal stroma. Here phagocytic elements from the blood and fixed tissues are mobilized against the invader. Prominent in this array are the histiocytes, which during the inflammatory stage aid in the disposition of the bacteria and later as fibroblasts assist in repair. The nasal membranes are rich in lymphatics and drain into the deep cervical and pharyngeal glands. In severe infections swelling of these glands may lead to stiffness and tenderness of the neck muscles and even to suppuration. Involvement of the sinuses, the ears, and the lower air passages may occur as a result of an extension of the infection produced by the known pathogenic bacteria. These organisms are also responsible for the long stand-

ing colds and for the change from an acute to a chronic stage.

Investigative work on the secondary defense mechanism is being ably carried out by Fenton and Larsell.[14] These workers have already produced much valuable information concerning the response of the sub-structures of sinus membranes to all manner of treatment and manipulation.

Most of the recent research has, however, been directed toward a more complete understanding of muco-ciliary activity and nasal ventilation.

A tireless worker in this field is Arthur Proetz[15] of St. Louis, who is in a large way responsible for the awakened interest in nasal physiology.

Important also is the work of Hilding,[16] who has traced the course of the mucous streams in the nose and sinuses. He calls attention to the fact that normally the mucous film is in constant motion toward the nasopharynx and is continuous with the film which covers the pharynx and passes down the esophagus into the stomach. Foreign material picked up in the nose starts on its way and if not ejected en route will eventually enter the stomach.

Lucas and Douglass[17] found the mucous film to be made up of two layers, an outer mucinous, viscous layer which contacts the tips of the cilia and an underlying more watery layer in which the cilia work.

According to Negus[18] of England cilia work normally in a medium which contains a variety of salts in combination, all of them being necessary. Early rhinitis cases vary in reaction from neutral to alkaline. Normal mucus has reaction varying from pH 6.6 to 7.4. Cilia beat vigorously in an alkaline solution of pH 8.5 and slow down in a medium of pH 6.4 or less, although Proetz has observed their action in sinuses containing pus. Linton[19] thinks paralysis of the cilia is produced by changes in the hydrogen ion concentration rather than the toxicity in the presence of bacteria. He tested ciliary activity in a medium of pH 5.0. The beat stopped in one to two minutes to be continued after the addition of NAOH sufficient to raise the pH to 7.4.

Charlotte Haywood[20] thinks the length of time the cilia continue to beat depends on the pH of the solution but to a greater extent on its CO_2 ter sion.

Buhrmester[21] found the normal mucin content of nasal mucus to average 1.31%. When secretion increases, as it does in a beginning cold, the mucin content drops, which affects the viscosity and allows virulent bacteria to penetrate the mucosa. Linton[22] reports that death was caused in seventeen of eighteen animals by such an invasion and he thinks the invasion was successful, due to the increased hydration of the nasal secretion which followed the inoculation.

Considerable work has been done to determine the effect of nasal obstruction on nasal physiology. In the course of his experiments Hilding blocked off one side of a rabbit's nose by suturing the anterior nares. After three weeks, examination revealed considerable damage to the cilia not only on the obstructed side but on the open side as well. This led Proetz to the observation that removal of the anterior wall of the sphenoid and ethmoid bulla must be harmful to the cilia within these cavities. This is in line with the work of Lucas and Douglass,[17] who found that the cilia beat much more vigorously along the protected areas of the floor and the under surface of the inferior turbinate than along the medial surface of the middle turbinate, where they were constantly exposed to the blasts of inspired air. It is also known that the cilia on the anterior surface of the turbinates are practically inactive.

The importance of nasal ventilation on sinus drainage was shown by McMurray.[9] He filled both antra of a human subject with lipiodol and blocked off one naris. X-rays at intervals showed the oil unmoved for seventeen hours on the occluded side, while on the open side oil had passed out of the ostium and reached the floor of the nose in five hours. After removal of the occlusion, the oil on that side started to move at the same rate of speed and also reached the floor in five hours. Negative pressure caused by inspiration is shown by this experiment to be of vast importance in the evacuation of heavy material from the sinuses. This idea is not new. Hajek,[9] some years ago, said that the narrow and deep infundibulum had an effect similar to that of a suction tube upon the pus discharging from the antrum. Yankauer[9] also thought that inspiration exerted a suction action on the sinuses, the return of the fluid being prevented by a valve like action of the hiatus semilunaris. We may glean from these observations that the conformation of the hiatus semilunaris and infundibulum is the essential factor in the production of nega-

tive pressure in the sinuses draining into this area, and this fact should discourage indiscriminate operations in the middle nasal meatus which might destroy that conformation.

The extreme viability of the nasal epithelium has always been a constant source of surprise to investigators. Sharpey,[1] one hundred years ago, observed active cilia in the gullet of a turtle fifteen days after its death, while the body was in a state of putrefaction. This may be explained on a philogenetic basis, the ciliated membrane being an ancient structure biologically. Heine[23] has shown that the cilia are unaffected by large doses of radium and x-ray, although the substructures show marked changes. Fenton[24] has shown the ineffectiveness of x-rays in the treatment of sinusitis.

Ciliary response to the action of drugs has been thoroughly covered by Lierle and Moore,[25] Luongo[26] and others. The results of their work on the drugs in common use reveals the unfortunate state from which we hope nasal therapy is emerging.

1. Water, tap or distilled, promptly stops all ciliary action. When sodium chloride is added to make a normal saline solution the action of the cilia is restored. Some have found the rate of action to be accelerated.

2. Oils applied to the membrane lie stationary as a heavy blanket, causing a definite interference with the normal ciliary action.

3. Mild silver proteins, argyrol and neo-silvol, are colloids incompatible with sodium chloride. They are applied in aqueous solution, which in itself is detrimental. All observers report the precipitation of the drug as it contacts the mucosa. Motion of the cilia was retarded, although recovery was good following the application of normal saline. Edema and fragmentation of epithelium has been observed after a prolonged contact of 10% argyrol with the membrane lining the frontal sinus.

4. All observers found that silver nitrate, 0.5%, destroys the cilia.

5. Cocaine solutions stronger than 2.5% paralyze the action; less than that have no effect other than shrinkage and blanching the surface.

6. Epinephrine, 1:1000, the preparation in common use, causes immediate paralyses; 1:5000 slows the action; 1:10000 causes an increase in action which lasts for one hour.

7. Ephedrine, 0.5% to 1%, in normal saline produced no change, the mucosa functioning normally throughout the application. A 3% solution was thought by some to increase activity.

8. Camphor, thymol, eucalyptol, menthol, zinc sulphate, merthiolate 1:10000, mercurochrome 2% all cause a decrease in the rate of motility, although recovery was good in most instances. Thymol and mercurochrome, however, had a lasting depressing action.

Following intravenous administration, these effects were noted by Luongo:

9. Morphine caused initial decrease in action, followed by restoration. Codeine, slight retardation.

10. Sodium amytal and scopolamine had very little effect.

11. Atropin caused drying and cessation of ciliary action, which fact contraindicates the use of a preparation called "Rhinitis Tablets."

Luongo also found that drying air caused cessation of motion, moist air very little inhibition and that cooling the cilia retards their action. Bathing in normal saline always restored slowed down cilia and increased the rate of action.

The results of these various experiments leave the rhinologist very little with which to work. Aside from the fact that he may remove bacteria from sinuses by lavage he must practically ignore their presence. The oily sprays which have heretofore been regarded as soothing agents to the red swollen membrane should be used sparingly. The physician does find, however, that he may satisfactorily combat the engorgement and improve breathing space with ephedrine. This drug combined with sodium amytal may be taken internally and, according to Gowen and Nedzel,[27] affords considerable relief in the early stages of an acute cold. Locally, ephedrine, 1%, in normal saline solution may be used effectively in all stages of a nasal infection. Early, while the nose and throat are in a dry state, this solution prevents stasis by supplying the necessary moist medium for ciliary action and by its flushing action on accumulated microorganisms and secretions. Later this function is taken over by the excessive watery secretion supplied by the nose itself. Then, the ephedrine-saline solution is effective in minimizing the engorgement which is so apt to block ventilation of the sinuses and the breathing passages.

The most effective means of administering the ephedrine-saline solution is by instillation in the

side posture, head-low position as described by Parkinson.[28] This position places the patient's nasal cavities in the most advantageous position to receive the maximum benefit from the treatment. The patient lies on a couch or table on the right side with his arm under him and a pillow under his shoulder. A dropperful of solution instilled into the right nares flows to the upper straits of the nose, where it is allowed to remain for three or four minutes. The shrinkage action of the ephedrine should soon act on the middle turbinate sufficiently to permit the solution to flow into the middle meatus. Here, further shrinkage causes further penetration and unless the congestion is extreme the solution should reach and immerse the various sinus ostia opening into this area. The openings reached by this treatment are those draining the maxillary, the frontal and the anterior ethmoidal sinuses. These cavities comprise the anterior group and are those most likely to be involved in the acute process. Gentle blowing removes the solution and the procedure is repeated on the left side.

In view of the fact that the solution is nonirritating; that its continued use is in no way detrimental to ciliary action, the procedure may be repeated at intervals if the comfort of the patient warrants it. This form of treatment should not be expected to cure or prevent a nasal infection and there is always the possibility of carrying the disease to the sinuses. The same danger, a spread of infection, characterizes all forms of local nasal therapy and is no more likely with the instillation of ephedrine-saline solution than with the others. The relief afforded the patient with this form of treatment is usually instantaneous and lasting, and this fact alone more than justifies its use.

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DISCUSSION

Dr. Francis Lederer, Chicago: Dr. Van Alyea has ably presented an historic resume to us this morning in order to rationalize a rather confused therapeutic armamentarium. While he did not reach the conclusions that might be drawn from such a presentation, he has apparently tried to base his discussion on an anatomic-physiologic conception. However, there has been an attempt to make the cilia a sort of glorified structure, as all these conceptions are entirely based on ciliary activity. Yet we must remember that the

cilia are more resistant than these examples seem to prove. Cilia have been exposed to x-ray and radium dosage which ordinarily would exfoliate the skin of the neck or body, and yet cannot withstand silver nitrate. I do not say that in defense of present therapeutic problems, as we find them in the field of rhinology, because I personally decry the fact that the nose has been a dumping ground for everything under the sun, and we get most of the basis for this therapy from the detail men who visit us. Whatever the cause of the so-called common cold, it is certainly conjectural insofar as our present knowledge is concerned. The numerous well-conducted studies, upon which tremendous sums of money have been spent, have merely produced results which are reiterations of the old adage—if you are free from contact from those with colds and keep up your resistance you will not get the cold. Otherwise, the knowledge seems to be a hundred years old, as Dr. Van Alyea said. Perhaps we will all admit that the important therapeutic basis is the improvement of nasal ventilation, and we feel that this is a physiologic approach. Submucous resection, for example, well performed and properly indicated, we all agree is the finest type of operation we have at our command. However, we do not recommend any operation that mutilates the normal structures that are so necessary to nasal physiology.

Dr. Van Alyea does not want us to sit back complacently and think we have achieved perfection. He brings in the common cold, because he feels in this common cold are all the things with which we are concerned, the starting point of future ills. In our laboratories and in our clinics we may find a panacea, but I doubt very much if we will find it by emphasizing too much these hundred year old concepts regarding ciliary activity.

Dr. A. R. Hollender, Chicago: General practitioners for years have been treating upper respiratory infections without local measures. Many cases improved and only a small percentage developed complications. We cannot overlook the fact that a large number of head colds and sinusitis cases get well spontaneously. The approach to treatment in upper respiratory infections depends largely upon the specialty we are practicing. It is well known that the rhinologist emphasizes topical treatment.

It is questionable whether the cilia have such a significant rôle in nasal physiology. Certainly there is evidence to prove that disturbed physiology of the nose is often out of all proportion to the clinical course.

Vitamins undoubtedly have a relationship to upper respiratory disease. It is known, however, that the claims of commercial houses in this connection have been highly exaggerated. When vitamin deficiency exists, it should be corrected.

Dr. Thomas Galloway, Evanston: This work is very valuable, showing the normal physiology of the nose. I think, however, that there are some defects in the line of reasoning. The author visualizes what is the normal situation in the nose and tries to reproduce it by treatment. But there is a marked reaction in the inflammatory process which is nature's response to invasion by bacteria, and that may be the process we should try to reproduce. X-ray is indicated in certain infections, and the response to therapeutic x-ray is chiefly increase in the degree of nature's own response. Foreign protein therapy is the same. Mild silver salts may act likewise and, I think, are quite valuable. In catarrhal conjunctivities they do act well in many cases, we do not know exactly how. Because we know so much more than formerly about nasal physiology we must not be too quick to think we know all there is to know. This paper is valuable in warning us against indiscriminate and illogical treatment.

Dr. O. E. Van Alyea, Chicago (in closing): I want to thank all these gentlemen for discussing this paper and at the same time apologize for not having anything original to contribute on this subject. Most assuredly we have not arrived at a state of perfection in nasal therapy. At the present time most of our efforts are directed toward an attempt to restore normal physiologic function and at the same time eliminate some of the annoying symptoms associated with congestion and excessive nasal discharge. The ephedrine-saline solution as advocated by Proetz and by Parkinson offers perhaps our most efficient agent toward this end. Perhaps, however, putting this solution into the nose with the head down is associated with some danger of carrying infection to sinuses which have been free. I am not familiar with the possibilities or the results. So far as vitamins are concerned, there is little I can say except that their use is indicated in the presence of a vitamin deficiency. My paper has been largely a resumé of the literature on the subject. There is still much to be learned and problems to be solved. It is hoped that bringing this subject up now and then will stimulate still further research.

VAGINAL SEPTUM, DOUBLE CERVIX AND BICORNATE UTERUS

Report of Six Cases of Maldevelopment of the Birth Canal

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One of the factors in maternal mortality in this country is the increase in the use of cesarean section. Almost any abnormality is used as an excuse of terminating the pregnancy through the abdomen. Anything that one may do to help clear the practitioners' minds of the fear which leads them to this procedure seems indicated. I would, therefore, like to report five cases where the uterus and vagina were not properly developed, three of which were delivered from below, with the result that out of the five cases there are four living babies.

Case 1. Para-i, aged twenty years. At the age of

16, she was ill for one month with pelvic pain and fever, and in January, 1923, she was operated on for appendicitis and the appendix was removed; however, the symptoms continued and the following May she was operated on by another surgeon and the uterus was drained of a large quantity of old blood. Menstruation then began and continued for several years. Several months before seeing the patient, her monthly flow became less and she had considerable menstrual pain each month. She was first seen November 9, 1926, and at that time reported no menstruation for two months; however, she was not in pain. Her vagina was quite shallow, measuring only five centimeters and in the upper third of the vagina there was a septum and no cervix could be found—not even an opening which would correspond to a cervical canal could be found using the smallest probe. This patient had some bleeding from November 25 to November 29 but she was regarded as pregnant in spite of her history, and on January 11, the fetal heart tones were heard. Since there was no cervical opening and the vagina was quite shallow with a partition, we felt that we were justified in terminating the labor with a cesarean section which we did on May 20, 1927. No septum was found in the uterine cavity and after delivering the baby, an eight-inch clamp was forced into the vagina through a small dimple which we believed corresponded to the cervical canal. The baby weighed seven pounds, three ounces, and the patient made a very good recovery. Drainage through this opening was quite sufficient.

Case 2, a primipara, aged 27 years. When examined for the first time she was found to have a septum in the upper third of the vagina, and two cervical openings. From the fourth to the sixth month this patient spotted occasionally and at six months the membranes ruptured and she went into labor. During her second stage of labor, the septum was divided and spontaneous delivery was permitted. The baby was not viable and soon expired. After delivery, the upper and lower half of this septum was cut back flush with the anterior and posterior vaginal walls and the raw surface was repaired with fine plain catgut. At the end of eight weeks, the patient presented herself for examination and outside of a ridge on the anterior and posterior vaginal walls, the vagina was normal and there was only one cervix. Some of the raw edges of the cervix were cauterized and later the cervix had the appearance of being normal. This patient was seen three years later for sterility. She had a normal menstrual history and both the vagina and cervix were normal; however, no gas could be passed through her tubes.

Case 3. Para-i, aged 24 years. She was first seen in 1927 when she was three and one-half months pregnant. She had a septum in the upper vagina, two cervices and a bicornate uterus. The pregnancy was in the right side but the left side of the vagina was larger than the right side. She went to term and at the time of labor the cervix on the right side dilated rather rapidly, and there was only a small amount of dilation of the left cervical ring, similar to the way in which the rectum dilates during the delivery of the head through the vagina. The tissue between the two cervices was quite thin and this septum was dealt with in the same manner as in Case 2. During the second stage it was severed and the baby was allowed to deliver spontaneously. The septum was then cut back, including the septum between the left and right side of the cervix and the raw surface was whipped over with plain catgut. When this patient was seen at the end of eight weeks, she had a normal vagina except for the scar tissue, and it had only one cervical opening. The external os was quite firm, and was closed similar to that of any other multipara. The right side of the uterus remained the larger.

Case 4. Primipara, aged 24 years. She was first seen in 1934, and was an exceptionally small individual, measuring only four feet, ten and one-half inches tall. At this time she was two and one-half months pregnant. A septum was found in the upper half of the vagina, and there were two cervices but only one uterus. The division between the uterine horns could not be defined by bimanual examination. As the uterus grew, it enlarged more on the right side. She was due February 5, 1934, but went into premature labor on November 22, 1933. After several days of spotting and pain, the membranes ruptured and she proceeded in active labor. This case was handled the same as the other cases. The septum was severed when tension came on it, and was dealt with in the same manner as the others following delivery. The baby weighed two pounds and ten ounces, and is alive today and quite healthy. This cervix needed to be cauterized at eight weeks, but five months after delivery, an examination revealed only one normal cervical opening. She gave a normal menstrual history.

Case 5. Para-ii, aged 37 years. She had been operated on by cesarean section in another city, three years previously because of a heart condition as well as vaginal septum and double cervix. On examination she showed a septum in the upper third of the vagina, with the right side much larger than the left, and two cervical openings. She carried her baby to term, and since she had had a previous cesarean section, this baby was delivered by a low cesarean type of operation, and when in the uterus, the lower uterine segment showed ridges corresponding to the midline and two cervical openings. This patient was sterilized at the time of operation. The baby weighed six pounds, eight ounces and lived. The patient has been seen on and off for the past two years and has a normal menstrual history.

Conclusions: Maldevelopment of the birth canal, such as, the presence of a vaginal septum, a double cervix, or a bicornate uterus is not an absolute indication for cesarean section. If pregnancy occurs, the patient should be permitted to have a test of labor.

636 Church Street.

WHOLE SUPRARENAL GLAND: A USEFUL THERAPEUTIC AGENT

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PEORIA, ILL.

My experience with suprarenal gland as a therapeutic agent covers a period of seven years, and involves more than 2,500 clinical cases. It includes a variety of conditions, many types and degrees of cases, in many kinds of individuals of various ages, under a variety of dietary, climatic, and other environmental factors. The products of several different firms have been used. Different dosages have been tried until the more effective ones were found.

As my experience during this study increased, I found it necessary to discard some early interpretative impressions. On the other hand, certain observations recurred so consistently with such a variety of patients, under such varied conditions, and continued to occur as time went on, so that certain beginning impressions gradually established themselves as convictions. It is those clinical observations which have stood the test of repetition and time which I choose to present in this report.

PRIME ESSENTIALS

Obtain a potent product. Anyone who has had any clinical experience with endocrine therapy is well aware that one's results depend very much upon the potency of the product administered. Take thyroid for example. There can be no doubt but that the effects one obtains from thyroid treatment depend very much upon whose preparation is being used. I have found this to be just as true of the adrenal gland products. With some, one will observe little if any effects. Whereas, with a potent preparation, the promptness and definiteness of the results can leave little doubt in observant minds as to its effectiveness.

Optimal dosage. To obtain satisfactory results with any given remedy one must find the best dose for each patient. Enough to furnish the desired maximum benefits, and at the same time being careful not to prescribe more than enough, to avoid untoward or perhaps injurious effects. This, of course, should be kept in mind with suprarenal gland therapy, as well as with any form of treatment.

A reasonable conception of neurohormonic activities. The more one knows about physiology and biochemistry the better will be one's therapeutic results with his patients. Accordingly, the better one may understand the vegetative nervous system the more capable will he be to make use of suprapreral gland or any other endocrine form of treatment. The more will he know what reactions to anticipate, the more intelligently may he interpret the effects, and naturally, the more able will he be to obtain desirable results. One cannot hope to expect the utmost benefit from any therapeutic agent, no matter how potent it may be, unless it is applied intelligently.

RESPIRATORY DISORDERS

Coughs. With the exception of codein, I have found no drug which is as dependable for controlling distressing coughs as is the adrenal gland material. At times codein will relieve coughs on which the suprarenal gland seems to have no effect. On the other hand, at times the adrenal material promptly relieves certain coughs which codeine or atropine do not affect. Occasionally when a cough fails to respond to either of these remedies, one may obtain the desired relief by combining the suprarenal preparation with iodine or thyroid. The glandular treatment appears to be especially effective with the spasmodic type of coughs. I say glandular treatment advisedly. Because at this writing one can hardly say whether the action of the adrenal substance is that of hormones, or of drugs.

In all, some 1450 cases with disturbing coughs have been treated. (For practical purposes and for the sake of clarity, throughout this paper, when quoting figures I will resort to round numbers rather than cite exact figures). The coughs treated were in 650 cases those of acute nasopharyngitis, in 300 of acute bronchitis, in 150 of chronic nasopharyngitis, in 70 of chronic bronchitis, in 100 of measles, and in 250 cases of whooping cough.

With the exception of the cases of measles, all of them were relatively afebrile in type. Many if not most of the conditions that are discussed in this article are apt to be associated with relative hypoglycemic or vagotonic conditions. That is one of the reasons why, except for measles, I have deliberately avoided using the suprarenal or thyroid gland in pneumonias or any other diseases which may have associated with them, hyperpyrexia, hyperglycemia or any other probable manifestation of increased metabolism. I have tried the adrenal material, never the thyroid, in

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100 measles cases earlier in this study because there seems to be certain peculiar likenesses between measles and pertussis cases. Although this remedy did appear to control the coughs, and the patients did seem to do well, I discontinued its use in measles until increased information might more justify its use in such conditions.

With the coughs of the other disorders named, however, I am increasingly convinced of the value of the suprarenal gland therapy. I have seen it check promptly so many coughs either at their beginning or later after other measures had failed, that I can feel no other way about it. After seeing quite a few patients with histories of persistent disturbing coughs of weeks or months duration, whose coughs promptly abated and soon disappeared following the introduction of the adrenal gland treatment, one can hardly help but believe in the effectiveness of this treatment.

With whooping cough one cannot depend upon the suprarenal gland as much as he may with other coughs. In some cases, one may need to resort to other measures for a time or perhaps altogether. However, the adrenal material does give more relief in more cases, than has any other palliative remedy in my hands. Its effectiveness can better be demonstrated in late cases with a persistent cough. It has been said that late cases are better testing grounds for proving the benefit of any palliative measure in pertussis. Early cases may have been mild without any treatment. All in all, I appear to obtain better results with my whooping cough cases by giving them serum or vaccine, and suprarenal gland or whatever remedy may seem indicated in individual cases. Usually when the endocrine therapy proves to be unsatisfactory I have found that phenobarbital or perhaps iodine especially in the form of calcium iodid usually will give the desired relief.

Rhinitis (*Vasomotor*). I learned early in this study that adrenal gland combined with iodine or thyroid appeared to relieve the non-specific snuffles of infancy. I also observed that the same treatment seemed to relieve the afebrile "colds" of infants. Furthermore, I had noticed that in those cases which were being treated for their coughing, the frequently associated discharging noses seemed to clear up with the disappearance of the coughs. I could not resist the temptation to try to find out what the glandular therapy might do with the "colds" of children. Although, these cases seemed to do just as well as did those of the babies, like I have heard Dr. Brennemann remark about certain methods of treatment, I hesitated to believe my own observations. The ordinary head "cold" being a self-limited disease, I felt that I could not be sure of any apparent effects. However, gradually it dawned upon me that some of these patients particularly the allergic ones were returning with "colds," and that they seemed to respond to the endocrine treatment as well as they did before. Later on, a few of the mothers told me that their children were not having so many "colds" and that these "colds" were less severe. I found from my records that this improvement was also true of others. What was still more convincing to me was that a chronic vasomotor rhinitis in a few patients cleared up following treatment with the adrenal and thyroid glands. In all, this method of treatment was studied in some 300 cases of acute rhinitis, and in 100 cases of chronic or recurrent rhinitis. I feel that the results obtained furnish sufficient justification for further observations with the glandular therapy in this kind of conditions. I am reporting them for what they may be worth. I should point out that the results with the endocrine treatment in a few cases of hay-fever were disappointing. Some relief was obtained in certain cases but nothing like that which is seen with the other types of rhinitis.

Laryngeal Stridor. Judging from an experience with 40 cases of croup or laryngeal stridor of infants or children I believe that suprarenal gland may prove to be as effective in such conditions as is any other therapeutic agent of today. These conditions usually being so acute and perhaps self-limited, the results of any treatment are difficult to evaluate. Only further trial can decide the question.

Asthma. One or more attacks of dyspnea or asthmatic bronchitis has been treated with the adrenal gland in 130 cases. I have found it to be as effective if not more so than any other remedy which may be administered by mouth. When it fails, epinephrin given hypodermically will usually prove to be necessary.

Suprarenal gland seems to be very helpful in assisting in curing asthmatic individuals of repeated attacks. By continuing the daily administration of the adrenal gland and with it thyroid or iodides for as long as may seem indicated along with appropriate corrective and dietary measures one may apparently expect a cure of many of his

children patients. At least I have found it so in 40 cases. The extent of one's success in individual cases depends a great deal upon the nature of the cooperation one receives from the attendants.

GASTROINTESTINAL DISORDERS

Vomiting (spastic). In those cases of pylorospasm of infants which do not promptly respond to atropine or phenobarbital, one may anticipate relief from properly administered suprarenal gland in practically all of his cases. At least I have found it so in 60 of them. This is no place for a discussion of how much pylorospasm has to do with the vomiting of congenital pyloric stenosis. But this I do know, since 1929 *none* of my cases of congenital pyloric obstruction have required surgical intervention for relief. I began this study in January, 1930. Perhaps it is a coincidence. Time will tell. Most of these cases were relieved at home. The few that were hospitalized for lavages, gavages and closer observation were home within a few days. None of them, that is of those which were seen early, went through a critical period of anhydremia. One shouldn't have to wait for results with the endocrine gland therapy. If, providing the feedings are reasonably correct, a satisfactory improvement has not occurred within 24 hours, one should increase the dosage, or add iodine or thyroid to the medication. So far, with such a plan I have not had a failure with this kind of cases.

Colic (Infants). The results following adrenal gland administration in uncomplicated gastrointestinal colic of infancy are not so striking as are those in pylorospasm. Phenobarbital in some cases may serve better. However, one may encounter cases which do not respond to phenobarbital or other remedial measures, in which suprarenal gland may seem to supply the needed adjunctive help.

In 150 cases of colic in infants, I have apparently obtained satisfactory relief with the adrenal material alone or as an adjunctive remedy. In these cases one needs to pay close attention to the bowel function. If the bowels are free, suprarenal gland is indicated. If the patient should be constipated, one may find it advisable to also give atropine, iodine, or thyroid.

Diarrhea. The adrenal gland seems to have as much of an antispasmodic action upon the intestinal tract as it does upon the pylorus. I have found it a satisfactory agent in checking or assisting in checking frequent loose stools in 200 cases of diarrhea in infants and children. The suprarenal preparation alone or with bismuth has been far more effective in my hands than has the raw apple or any other method of treatment. Nor does the diet need to be so drastically restricted with this method. McLean and Sullivan[1] have reported similar experiences with cortin.

CIRCULATORY DISTURBANCES

Cyanosis. In idiopathic cyanosis of the newborn suprarenal gland seems to be quite helpful in bringing about relief. Ten cases have been so treated. It also has seemed beneficial in a few cases with congenital heart lesions. In such conditions the heart should be watched and digitalis given at the first signs of over-stimulation.

NERVOUS SYSTEM

Antispasmodic. Many of the cases with the conditions under discussion may be associated with a hyperactivity of the vagus system. This may be manifested by the patient in one or more ways. So it is not surprising that one individual may demonstrate one or more than one of these disorders from time to time. Hence, the observations reported in this paper would seem to indicate an antagonistic effect of the suprarenal material upon the parasympathetic system, probably through its stimulating action upon the sympathetic system.

Sedative. The patients with the so-called vagotonic symptoms are frequently nervous, jumpy and irritable. Relief of the disturbances is usually followed by a noticeable quieting down of the nervous condition. I had attributed this simply to a relief from the irritating disorder. It did not seem possible that there would be any actual sedative effect from the glandular substance. However, having been asked by several mothers whether there was anything in the medicine to make their children sleepy, I began to pay closer attention to this question. I have observed that in some cases there does seem to be a sedative effect, and in some instances an actual drowsiness, never a stupor, especially following repeated large doses. Comparing this impression with the relaxation which may follow thyroid administration in some cases of hypothyroidism, it does not seem so impossible that the adrenal gland may have a similar action in certain individuals.

SKIN DISORDERS

Eczemas. Suprarenal gland alone or with

iodides or thyroid has been used in 60 cases of eczematous lesions. This form of treatment in my experience has been much more successful in relieving eczemas than has any other therapeutic measure. To my mind the response has been more prompt and more certain than are those which have been reported with corn oil. And there is no comparison in the palatability of the two preparations. One doesn't have to wait, as has been reported of the oil method, for some time to elapse for signs of improvement to appear. A definite improvement usually follows the adrenal gland administration within one or two days. When the proper dosages for individual cases have been attained and if they are maintained, rarely does the skin condition fail to remain under desirable control. If the attendants should discontinue the treatment too soon, the lesions will soon reappear. They disappear again, however, following resumption of the medication. Such experiences in my opinion and also in those of observing attendants are excellent testimonies of the effectiveness of the glandular method of therapy. Because of the tendency to self-limitedness of the eczemas of infancy, one may be inclined to discount any apparent response to whatever medication may be administered. In children, however, the equally good responses which occur with the suprarenal gland treatment are more impressive.

A striking feature of the use of the endocrine substances in treating eczemas is that feeding the patients is not nearly so much a problem as it is with other therapeutic measures. Within a short time the patients are enabled to tolerate with little or no reactions foods to which they had been definitely hypersensitive. Therefore, it is relatively easy to supply the children with a balanced and adequate diet and at the same time have the skin condition remain under satisfactory control. Eggs and perhaps butter fats are the only foods with which one may have some difficulty. At least, that has been my experience. Local palliative applications may be helpful in the beginning but they are seldom needed for any length of time.

Urticaria. Although I have prescribed suprarenal gland to 15 cases of urticaria, the endocrine material does not seem to be nearly so dependable in relieving these conditions as it does with the eczemas. A few of the cases appeared to obtain some relief, but in most of them there was little if any noticeable effect.

Diaphoresis. Although I have no data for a definite opinion on any direct effect that the adrenal preparation may have on the sweat glands, I have noticed that in several cases of thyroid dysfunction an accompanying excess perspiring disappeared along with the other signs and symptoms. This phenomenon may be merely of passing interest and may have no practical application.

UROGENITAL TRACT

Antidiuretic. The only observation I have on an action of the adrenal gland preparation upon kidney function is that it noticeably inhibits the diuretic action of the thyroid therapy.

ENDOCRINES

Thyroid. If suprarenal gland had no other therapeutic value its use would be extremely worth while with thyroid therapy. In treating hypothyroid patients who are intolerant to thyroid gland in minute doses, or those who later develop toxic reactions, the adrenal substance is simply invaluable as an adjunctive measure. One may supply sufficient amounts of thyroid to intolerant individuals, one may give larger dosages to most of his cases without toxic reactions developing and thus be enabled to obtain desirable results with a minimum of untoward effects. Since gaining that information, I have found the treatment of cretins and hypothyroid children to be easier and my therapeutic results in such cases are uniformly much better.

In some respects the adrenal material seems to have an antagonistic effect upon the thyroid, in others, a synergistic one. And yet I am not sure that it has either directly. Might not an actual substitution or replacement effect be involved in either case? For example, thyroid gland by mouth may stimulate gastrointestinal peristalsis, cause diuresis, hyperpyrexia, erythema, iodine rhinitis or dermatitis, a cough, or laryngeal stridor. Suprarenal gland by mouth in turn may inhibit any or all of these untoward effects of thyroid action. It inhibits the untoward reactions to thyroid with little if any apparent detraction from the desired beneficial effects. On the other hand, in certain cases when the adrenal substance fails to relieve certain symptoms which it may be expected to relieve, or after a period of time it appears to have lost its effectiveness, the addition of a certain amount of thyroid or iodine to the suprarenal medication will frequently bring about the desired relief. In certain condi-

tions such as vasomotor rhinitis, neither adrenal or thyroid gland alone will produce clinical results that will compare with what the two preparations together will do. Whether or not such seemingly antagonistic and interdependent action has anything to do with antihormones, I do not know. It would seem to me that the not unlogical place to find regulators of individual hormones, be they synergistic or antagonistic, would be in the endocrine glands themselves. The apparent establishment of tolerance to thyroid in thyroid intolerant individuals by the oral administration of suprarenal gland, and the apparent restoring of adrenal gland therapy effectiveness after it has apparently been lost by the addition of thyroid gland, would seem to be suggestive clues to say the least. Perhaps we are dealing with a matter of imbalance consisting of relative insufficiencies. In other words, by changing a lesser or greater activity of one part of the neuro-endocrine chain to a greater or lesser activity, one may in turn require a compensatory stepping-up or a stepping-down of another part or parts before metabolic balance can be established or restored. Meanwhile, however the therapeutic results may be produced physiologically, of this I am sure clinically they do occur.

Epinephrin. One firm from whom I obtain supplies of adrenal gland tablets assays the epinephine content to be 4.3%. In asthmatic dyspnea this preparation acts when administered orally very much like epinephrin does hypodermically. The advantages of the oral method especially in children are obvious. Rarely after using the suprarenal gland in asthmatic attacks have I found it necessary to resort to epinephrin.

Suprarenal Concentrate (Armour). With the comparatively little experience I have had with the suprarenal concentrate I have found its use disappointing. Occasionally it has given temporary relief in vasomotor rhinitis, but even then it tends to lose its effectiveness. Also it appears to have a tendency to dehydrate and cause loss in weight which certainly is not desirable with undernourished children. The whole adrenal gland combined with iodine or thyroid has been much more dependable in my hands in relieving similar conditions than has the suprarenal concentrate. Furthermore, with the whole gland therapy the patient's nutrition tends to improve rather than the reverse.

Cortin. I have no experience with cortin. It is of interest, however, to note that some of the effects of whole suprarenal gland therapy are very similar to those which are reported to follow cortin administration. On the other hand certain other effects are like those of epinephrin.

UNTOWARD REACTIONS

Abdominal Pain. In certain individuals, particularly constipated ones, the adrenal gland material may produce an attack of abdominal pain very like that which may follow the oral application of the stronger solutions of epinephrin. As I have said before this reaction may be relieved or avoided by using smaller dosages in individual cases, or by combining atropine, iodine, or thyroid with the suprarenal gland therapy.

Vomiting. Certain infants and children, especially those with constipation or gastroenterospasm, may react to the adrenal gland preparation with more or less vomiting. This untoward effect may be avoided by taking the same precautions as one would to prevent abdominal pain.

Constipation. Enough has been said concerning the effect of the suprarenal gland upon gastrointestinal activity. For the sake of emphasis, I repeat here that this endocrine material may cause constipation or aggravate a preexisting one in certain individuals. Atropine, iodine, or thyroid usually inhibit this effect upon the bowel function.

CONTRAINDICATIONS

Decompensated Heart. Because of the apparent and probable antagonism of the adrenal gland substance to vagus action, one should use this glandular preparation cautiously, if at all, in cases with decompensated hearts, and at all times keep in mind a possible sympathetic overstimulation. The pulse rate should be kept under observation.

Nephritis. I have not as yet knowingly given suprarenal gland to a patient with signs or symptoms of nephritis. Because of its apparent antidiuretic action and a possible hypertonic effect on the blood pressure, I feel that its use would be unwise in nephritic unless future information should justify it.

Constipation. Because it may aggravate the condition and may produce abdominal pain and vomiting one should avoid using the adrenal gland preparation in obstinately constipated cases unless one or the other counter-active remedies such as atropine, iodine or thyroid are also given.

COMPARISON WITH SIMILARLY ACTING DRUGS

Atropine. Atropine acts similarly to whole suprarenal gland in that it may in certain cases allay coughs, pylorospasm, enterospasm; may be helpful at times in asthma; and may allay hypertonicity in some infants. On the other hand it differs in that it may increase or produce nervousness in some individuals, or may increase gastrointestinal peristalsis, whereas the adrenal gland has just the opposite effect. Furthermore, one does not obtain a reaction from the suprarenal preparation such as the hyperpyrexia which may occur with atropine.

Iodine. The chief way that iodine may be compared with suprarenal gland as a therapeutic agent is that both may be effective in relieving coughs or asthma in certain cases. Frequently by combining the two one may enhance the effectiveness of either one. Also, certain cases of congenital pylorospasm may react to iodine much like they will to atropine.

Phenobarbital. Phenobarbital is particularly beneficial in relieving the vomiting and abdominal pain of the pylorospasm and the gastrointestinal colic of infancy. And in many cases so is the adrenal gland. In fact frequently the endocrine substance may relieve cases which fail to respond to the barbiturate. Although the suprarenal preparation does seem to have some sedative action it does not compare in that respect with phenobarbital. Both preparations may be effective in relieving stubborn coughs in certain cases.

Calcium. Calcium, especially if it is given as a calcium iodide, acts very similarly but not so effectively as does suprarenal gland with or without iodine or thyroid in "colds," coughs, asthma, or eczema. Calcium also has a moderate sedative action; calcium also like the adrenal material tends to counteract toxic reactions to iodine, without unduly inhibiting its desired results.

Ephedrine. Ephedrine acts much like suprarenal gland in asthma, but it does not have the same element of safety. The use of ephedrine is not without danger of alarming reactions. I have seen no such effects from enormous single doses (accidental) of the adrenal gland, nor have I observed any injurious effects from repeated therapeutic doses of the endocrine material no matter how long they were continued. With the disorders other than asthma in which the endocrine treatment may be quite useful, ephedrine does not seem to be so helpful.

Benzedrine. Although favorable reports have been presented as to the effectiveness of benzedrine in spasmodic disorders of the gastrointestinal tract, I have had no experience with it in such conditions. It does seem helpful in upper respiratory disorders in certain cases. However, if one should choose to prescribe benzedrine he should keep in mind that the over-stimulation and increased nervousness of its untoward reactions is just the opposite of the quieting down action of the suprarenal gland.

Codein. Needless to say, codein may be quite effective in relieving certain coughs and attacks of asthma. It is not any more infallible, however, than is any other remedial measure. Frequently the suprarenal gland may relieve certain coughs on which codein seems to have no effect. Codein also seems helpful in certain "colds," in asthmatic dyspnea, in certain gastrointestinal disturbances, and as a sedative. It, too, has the advantage of being effective by mouth. At the same time, in larger doses it may produce the same kind of abdominal pain, vomiting and constipation as may the adrenal gland. At times the concomitant administration of iodides appears to enhance the effectiveness of codein.

Neosynephrin. Neosynephrin in my experience more nearly approximates the action of the suprarenal gland than does any other therapeutic agent. Its elixir may usually be depended upon to produce similar favorable results in similar conditions nearly as well, at times seemingly better, as one may obtain with the adrenal material. Furthermore, little if any untoward reaction follows the use of neosynephrin. At times I find it helpful to use it interchangeably with or as an adjunct to the endocrine therapy.

Aspirin. Aspirin is reported to be beneficial in certain "colds" and coughs and in certain cases of asthma. Its chief value with endocrine therapy is in assisting in counteracting untoward reactions to thyroid, particularly the hyperprexia.

Iron. I would not presume to suggest that suprarenal gland should have a direct stimulating effect on the hematopoietic system, but its action is like iron in that either preparation tends to inhibit iodism. Syrup of ferrous iodide is still a useful therapeutic agent.

Sulphur. Assays show that the adrenal prep-

arations contain 3.77% of sulphur. I have heard so often about the old-fashioned household remedy of sulphur and molasses for "colds" and coughs. Perhaps the sulphur content of the suprarenal gland is not an important factor in the therapeutic results. Probably it is too unscientific to mention, but I cannot help wondering about it.

Gold Tribromide. Considering the enthusiastic claims which have been made for it, gold tribromide has been disappointing in my hands. According to my observations it has given little relief in whooping cough cases. At least, in my experience, it cannot be depended upon nearly so much as can phenobarbital, neosynephrin, or the endocrine form of therapy.

DOSAGES

Infants. In acute conditions better results seem to follow suprarenal gland administration at 2 or 3 hour intervals. Like those of epinephrin its immediate effects appear to be of relatively short duration. In less acute conditions better results seem to occur if the treatment is given with meals. The better minimal dose for infants seems to be 0.03 (½ gr.) or occasionally 0.016 (¼ gr.) of desiccated whole suprarenal gland. The optimal or maximum dose appears to be 0.06 (1 gr.).

Children. The better dosages for children seem to be 0.06 (1 gr.) to 0.12 (2 gr.) of the desiccated whole gland at the same intervals as used for infants. In my hands, when thyroid is also used, it appears better to give half as much of thyroid as of suprarenal gland. According to information received from various colleagues, the proportion of thyroid indicated in the endocrine form of treatment seems to vary according to local climatic and environmental conditions. Very probably this may depend to a certain extent upon the iodine or other mineral content of the local water and food supplies.

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Jefferson Bldg.

DISCUSSION

Dr. J. W. Sours, Peoria: *It is altogether true that* frequently a lapse of time ensues between the introduction of a form of therapy and the discovery of the physiological basis warranting its use. Familiar examples of this are Withering's use of digitalis for cardiac failure and the use of ipecac in the treatment of amebic dysentery. Frequently one must knit together tangled skeins to secure evidence for rationalization of any therapeutic procedure. Frequently one must delve into comparative anatomy and embryology in the search.

The fetal adrenal gland is large chiefly because of the great development in the inner layer of the cortex. The adrenals rapidly decline to about one-tenth of their original weight shortly after birth. Some investigators have thought this decline to be due to too sudden withdrawal of the influence of the ovarian hormone, but there is no experimental evidence to bear this thought out. A rapid decline in tissue mass during the first few months of postnatal life, however, suggests that the adrenal gland plays a major rôle in intrauterine body economy and secondly that following birth some of the other ductless glands must take over its function. Might it not be surmised that in some of the conditions Dr. Barbour has mentioned, other endocrine glands have failed in taking over some of the functions of the adrenals, these functions as yet unknown and unmeasurable, and that in supplying whole suprarenal gland one is in a measure compensating for this lack?

Extracts prepared from the whole of the adrenal gland have proved to be more potent than those made from the cortex alone. There is some evidence that cortical substance is diffused into the medulla and is held there. The addition of adrenalin to cortical extract has also been shown to increase its potency in reviving adrenalectomized animals from coma. In this sense both portions of the adrenal work synergystically. This conception is reinforced by the fact that in Addison's disease an increased sensitivity to insulin exists. Whole suprarenal gland extract would, therefore, seem more logical in considering such an extract as a therapeutic agent.

Suprarenal cortex appears to have a controlling influence over electrolyte metabolism in general and sodium metabolism in particular. Those of you who have followed Kendall and Wilder's work with cortin will remember that a high sodium and low potassium intake is a very necessary procedure in treating Addison's disease. Potassium, considered ordinarily as an intracellular electrolyte, is retained in suprarenal insufficiency. Magnesium is also retained. Loewi showed that after vagal stimulation choline or one of its addition-modifications was liberated and that choline is to the parasympathetic system what adrenalin is to the sympathetic system. He also demonstrated that the potassium acted very much like vagal stimulation. Might it not be true that some of the conditions Dr. Barbour has mentioned will be found, in their ultimate analysis, to have a background linked with sodium excretion and potassium retention?

A profound influence is exercised by the cortex on allergic states. The effect of the medulla is too well known to bear repetition. Fluid in the blood vessels cannot be retained without the cortical hormone and as a result anaphylactic reactions and edemas occur in various parts of the body. Is it reasonable to assume that a modification of water balance between tissues and tissue fluids may occur in certain diseased states and through a perversion of function bring about alter-

ations in mucous membranes, such alterations being *snuffles, head colds, chest colds?*

The adrenal glands have a well marked detoxifying action. This is demonstrated by their ability to detoxicate snake poison and tetanus toxin in vitro. Much of this thing we call immunity is linked up with the lipoids and more particularly, cholesterol. The suprarenal glands exercise partly a formative and partly a regulatory action on cholesterol. It might well be argued that in supplying the body with whole suprarenal gland we are favorably influencing so-called natural immunity.

The suprarenal gland has been shown to be a storehouse for vitamin C. Man has lost the power to synthesize this vitamin, although some of the lower animals are able to produce it at will from ingested food. The action of vitamin C on the cement substance between capillary cells, the action of vitamin C insofar as the hematopoietic system is concerned, is well known. It is not outside the realm of probability that some of the actions of whole suprarenal gland extract are related to the actions of vitamin C.

It is sincerely hoped that in the future experimental evidence will reinforce the tenets held forth in this paper for then perhaps it will be possible to fractionate whole suprarenal extract so that one may potentiate one desired effect and at the same time minimize any untoward reactions mentioned. I believe that Dr. Barbour deserves congratulation for this very nice piece of clinical work.

Dr. Orville Barbour, Peoria: Nothing seems to be gained by giving dosages larger than 1 grain to infants. In children the maximum dosage is apparently 2 grains. The better intervals in acute conditions seems to be three hours or two hours. The thus apparent fleeting direct action makes me think that the epinephrin content has a good deal to do with the effects of the suprarenal preparation. In chronic conditions better results appear to follow the administration of the glandular material with meals. Preparations of Parke Davis and Co., and Eli Lilly and Co., have seemed to give better results than have those of other pharmaceutical firms. Why this should be so, I cannot explain.

A NEW METHOD OF STABILIZING WEAK JOINTS

L. W. Schultz, M. D.

CHICAGO

Restoring weak joints to normal usefulness has long been a problem in medicine. The method I am about to describe is applicable to any joint, for in my experimental work on animals I used this method on various joints and found the same results that I obtained in the joint I am particularly interested in, namely, the temporomandibular joint.

Subluxation of the temporomandibular joint is, comparatively speaking, a frequent occurrence. The causes are numerous and well known. There may be a congenital weakness or misshapen condyles—one or both; strain may cause it, strain during an operation in the mouth or throat; yawning is a factor and attempts by children to insert large objects into the mouth, positional pressures may be added.

The resulting weak joint may be painful. An annoying snap or click is often present or dislocation.

In the past, treatments have been disappointing or only partially successful. The best treatment known today is rest. Surgery has been attended by some success, physiotherapy with less. The former consists of mattress sutures passed laterally through the capsular ligament, or the meniscus may be removed. Mechanotherapy is applied in the forms of orthodontic appliances, prosthetic devices, changing the occlusion of the teeth or pads held under pressure against the condyles.

Knowing the limitations of these procedures and knowing that the cause was a weakened capsular ligament, I concluded that the production of a fibrosis in the ligament held the secret to the treatment of greatest promise. This, then, led me to find the most successful fibrogenetic agent used in other operations such as in varicose veins, hemorrhoids, hernia, etc. I found that Rice had used sodium psylliate for hernia with satisfaction after the failure of many others. I did not try this agent alone. I tried a number of others but this report deals only with sodium psylliate.

In my experiments on dogs I tested it in various joints including the mandibular. I sought its effect on vital organs, in the blood stream, in the peritoneal and pleural cavities. It seemed to produce no untoward results anywhere. When applied to abraded surfaces of the liver it stimulated fibrosis.

Within the temporomandibular as within other joints, no injury to the structures was visible either grossly or microscopically, either immediately or at autopsy. In all cases, however, fibrogenesis occurred. In this investigation dogs were used and many hundred microscopic sections were made and studied.

Normal care should be exercised in making the temporo-mandibular injection because of the many important structures in the condylar area

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such as the internal maxillary and carotid arteries, the middle and internal ear, the brain, parotid gland, facial nerve and so forth. The immediate reaction to the injection is a sense of fullness, which may be followed by pain within 20 to 30 minutes. This is of short duration and may be allayed with a sedative or anodyne.

During the past year I have treated more than thirty-five persons with results that approach complete satisfaction.

My conclusions are:

1. Sodium psylliate is a dependable fibrogenetic agent.
2. It is non-injurious to tissues generally.
3. It produces no systemic disturbance.
4. The fibrosis obtained in the temporomandibular joint is persistent.
5. It is employable by the general practitioner.

DISCUSSION

Dr. Austin A. Hayden, Chicago: I have appreciated Dr. Schultz's presentation very much, and I have appreciated it because it comes pretty close to home. I had a case of this sort very shortly after Costen of St. Louis presented his paper before the last yearly Laryngological Section of the A. M. A., in which he approached this matter very differently from Dr. Schultz. This woman had an edentulous mouth, a facial paralysis following the mastoid operation—which I did not do—and she had recurrent dislocation of the lower jaw, with a continuous pain sometimes excruciating in character, radiating into the right side of the head and pretty definitely localizing in her ear. She felt that not all the mastoid had been taken care of. Dr. Costen, to whom I sent her, had the lower jaw built up with dentures and proper occlusion made—a bite fitting set of teeth, and she had complete relief. She lived in St. Louis, incidentally. Dr. Schultz's method is a very much simpler one. It can be used by any nose and throat man, and we are very much indebted to him for bringing it before us. It is nice to see his father here, too—one of the first oral surgeons of Chicago. We have all seen a number of edentulous patients upon whom operation has been performed who have dislocation of the jaw. I believe such cases are candidates for stabilization of the temperomandibular joint.

Dr. Harry Pollock, Chicago: I would like to ask one question: Is it possible to get so much fibrosis that you create an ankylosis?

Dr. L. Schultz, Sr., Chicago: A great many of these sclerosing agents have been used. My son has investigated them all and found them wanting—except this one. One thing he did not bring out for lack of time, that I believe should be mentioned, is that this agent is the only one that fills the requirements he demands. In edentulous jaws we have a condition that does not yield to sodium psylliate, also in cases where the occlusion has become too close, where the teeth are worn down. Hence the use of this remedy is always preceded by a clinical and x-ray examination of the patient in order to establish these things. And the point should be stressed, to keep from making injections where they are not indicated. What happens in the joint after the solution has been injected into the joint cavity? Nothing happens in the joint itself. It does not attack synovial or serous membranes. At the present time we do not know how long the fibrous tissue, desposited in the joint ligaments, lasts; if it is a year or two, it is long enough for the joint to recover normalcy.

Dr. L. W. Schultz, Chicago (closing): In answer to Dr. Ford's question, I inject from four to eight drops of a 5% sodium psylliate solution into the joint cavity at weekly or biweekly intervals. I have deliberately and repeatedly tried to produce ankylosis in animals, but there is no ankylosis. There is no destruction of tissue, which I think prevents ankylosis. This procedure is absolutely new, and at meetings where I have presented it, the question of ankylosis was always raised. The results are so spectacular that one can hardly conceive how it produces the change in so short a time.

Dr. J. J. Callahan and I are using this same solution on joints elsewhere in the body, shoulders, knees, wrists, etc. I believe it to be of use in the treatment of weak sacroiliac joints, although I have not yet tried it on that joint.

To C. A. Searle & Co., who furnished me free of cost all the sodium psylliate necessary for my experimental work, I feel indebted and thankful.

OXYGEN CONTENT OF THE BLOOD DURING THE NEW TREATMENTS FOR SCHIZOPHRENIA

A Preliminary Report

JULIUS STEINFELD, M. D., and L. GERBER, Ph. D.

PEORIA, ILLINOIS

The Freudian school holds the view that schizophrenia is to be understood as a continually regressive process, which is most clearly seen in catatonic stupors. One sees in this stage a complete autistic personality, isolated from the environment, comparable to the prenatal stage of life. Data on humoral conditions at this stage of regression are rare. An important paper bearing on this subject is that of Haselhorst and Stromberger,[1] who showed in a large series of careful studies that the transformation from the prenatal (complete autistic) to the postnatal phase is characterized by a sudden marked increase in the oxygen content of the blood: the average value for the venous blood of the fetus retained in utero (no uterine contractions; cesarian section; lumbar anesthesia) was 3.97 volumes per cent.; in the new-born child before

From the Michell Sanitarium.

the first breath was taken the oxygen content of the venous blood was 3.4 volumes per cent. and that of the arterial blood 10.14 volumes per cent. After birth, values for the oxygen content of the blood increase to the normal range for venous blood of from 10 to 15 volumes per cent. We cannot as yet definitely prove a correlation between the oxygen conditions of the blood of the prenatal phase and that of the autistic schizophrenic state. Yet it is striking that some of our chronic schizophrenic patients showed very low values for the oxygen content of the blood —even as low as 3.8 volumes per cent. in one case (D.S.), which is barely compatible with life.

The following figures illustrate the low oxygen content in some cases:

	Oxygen Content of Venous Blood at Fasting Level, Vols. Per Cent
D.S. Hebephrenia of ten years' duration.....	3.8
F.G. Hebephrenia of five years' duration.....	5.6
T.V. Catatonia of one year's duration.....	5.8
H.T. Hebephrenia of five years' duration.....	6.0
R.H. Schizophrenia of seven years' duration..	7.8

These findings are in agreement with those of Segal and Hinsie,[2] who found in some of their schizophrenic patients values as low as 4.48 and 4.57 volumes per cent.

As concerns the reversibility of the schizophrenic process, spontaneous remissions with full recovery are well known, and this is in agreement with the lack of consistent significant anatomic changes in the brains of schizophrenic persons. Therefore, one is led to the thought that the causative agent of the disorder may be a function of humoral disturbances of a reversible nature.

Observations made on thirty-two patients (some of whom have previously been reported on[3]) who were treated within the last eleven months in this sanatorium* have been similar to those of other investigators in this field; that is, the insulin treatment of Sakel[4] and the convulsion treatment of Meduna[5] lead fundamentally to the same results. Because of the essential difference in the nature of the drugs insulin and metrazol, one must look for a common effect that will account for the clinical results obtained. On recalling that the carbon dioxide treatment for schizophrenia of Loevenhart and his co-workers,[6] used and abandoned several years ago, produced temporary and, occasionally, permanent lucidity such as is seen in insulin and metrazol treatment, it occurred to us that the effectiveness of all these treatments was to be looked for in the gas equilibria. This postulate is supported by the recent work of Himwich,[7] who found that in hypoglycemic dogs the venous blood returning from the brain resembles arterial blood in color, and by Freeman[8] and Hoskins,[9] who considered the possibility of a disturbed gas metabolism in schizophrenia.

In our investigation the oxygen content of the blood was determined by the method of Peters and Van Slyke,[10] using their volumetric apparatus. Speciments of venous blood were taken from the patient in the fasting state before administration of the drug, during coma in the case of insulin, and during the seizure in the case of metrazol, and also in the following period. In a few instances the carbon dioxide content, the blood sugar and the volume of packed cells were also determined. Since this is a preliminary report, only a part of the data will be given. More complete protocols including figures on the oxygen content of arterial blood, oxygen capacity, etc. (up to this time 172 gas analysis) will appear in a subsequent paper.

Ralph H., aged 28 years; white. Diagnosis: third attack of paranoid schizophrenia; first attack eight years ago.

Table 1.—Data on Ralph H., Obtained During Treatment with Metrazol

Date	Time	Patient's Condition	Oxygen Content, Vols. %	Blood Sugar, Mg. per 100 Cc.	Vols. of Packed Blood Cells
4/14/37	7:00	Fasting	7.8	...	...
	10:00	End of convulsion after metrazol	3.3	...	...
	10:15	Patient relaxed	18.6	...	...
4/20	7:00	Fasting	9.4	...	...
	8:00	End of convulsion after metrazol	1.3	...	...
	8:15	Patient relaxed	16.3	...	...
	9:15	Patient resting	19.3	...	...
4/27	9:40	Fasting.....			
	10:00	End of an incomplete convulsion (no asphyxia)	3.02	75	50
	10:16	Awake; relaxed	9.8	78	...
	11:30	Resting	6.8	69	48
	1:30	Resting	12.0	69	47
4/30	9:50	Fasting	11.0	93	47
	10:00	End of convulsion...	0.85	98	58
	10:15	Relaxed	15.3	103	52
	11:15	Fasting and resting..	14.4	64	49
	1:15	Fasting and resting..	14.0	77	53
	3:00	Fasting and resting..	14.0	83	55
	5:15	Fasting and resting..	13.2	78	...

*With the assistance of Drs. S. Burton, R. Cohen and H. Korey.

Table 1 shows a profound drop in the oxygen

content of the blood at the time of the seizure, with an immediate rapid rise, which in several instances far exceeded the initial level. A moderately high level of the oxygen content may persist several hours. The magnitude of the rise following seizure is conditioned by the intensity of the seizure. Thus, it is seen that a light seizure, such as occurred on April 27, was followed by a slight rise and fall of oxygen, with a second inconsiderable rise. Indeed, after this treatment the mental condition of the patient became worse. In this regard it is interesting to note Meduna's observation that mainly deep seizures result in clinical improvement. No correlation between the oxygen and the sugar content of the blood could be found. Variations in cell volumes were checked by hematocrit readings. These proved to be inconsequential. The carbon dioxide content during treatment ranged from 60 to 64 volumes per cent. Only immediately after the seizure, when the patient showed cyanosis and asphyxia, the carbon dioxide content rose to 80.6 volumes per cent, and it dropped when the patient was again breathing normally.

Martha E., aged 28 years; white. Diagnosis: catatonia of fifteen months' duration.

Table 2.—Data on Martha E., Obtained During Two Treatments with Insulin and One Treatment with a Combination of Insulin and Metrazol

Date	Time	Patient's Condition	Oxygen Content, Vols. %	Blood Sugar, Mg. per 100 Cc.
5/21/37	7:45	Fasting	9.8	...
	11:00	Coma	10.2	...
	12:00	Deeper coma	16.7	...
	12:15	Awake after intravenous injection of dextrose	11.8	...
	1:30	Again hypoglycemic administration of dextrose by mouth	14.6	...
5/23	7:45	Fasting	12.7	80
	11:05	Coma	20.2	50
	12:05	Deeper coma	23.6	40
	1:25	One hr., 15 min. after sugar by nasal tube	10.9	72
	4:45	Awake	8.4	80
5/24	8:30	Fasting; no treatment on this day	10.1	82
	11:00	Still fasting	12.2	95
	12:20	One hr., 10 min. after sugar by mouth	7.3	113
5/31	7:20	Fasting	Sample lost	
	8:20	Light coma 1 hr. after insulin	12.4	...
	11:05	Coma	14.1	...
	11:07	Injection of metrazol.	...	...
	11:08	End of slight seizure.	8.9	...
	11:28	Coma	17.8	...
	12:15	Coma	11.0	...

The data in table 2 show that deep insulin coma is accompanied by a marked rise in the oxygen content of the blood. The lowest values for blood sugar coincide with the peak of the rise in the oxygen content. The rise in oxygen content (5/21) of from 11.8 to 14.6 volumes per cent. after the treatment was discontinued was caused by a secondary hypoglycemic reaction, which occurred with relative frequency in this patient.

It is especially to be noted in the treatment on May 31 that light insulin coma resulted in only a slight rise in oxygen content but that the seizure following the administration of metrazol produced a considerable increase in the oxygen of the blood. This suggested an advantage in combining the two drugs. Subsequent experience with the combination has proved promising. The details of these treatments will be presented in a later paper.

Frances G., aged 26 years; white. Diagnosis: Hebephrenia of seven years' duration.

Table 3.—Observations on Frances G., Made During Two Treatments with Insulin

Date	Time	Patient's Condition	Oxygen Content, Vols. %	Blood Sugar, Mg. per 100 Cc.	Vols. of Packed Blood Cells
5/26/37	8:00	Fasting	5.6	73	47
	12:15	Deep coma	16.7	50	48
	2:30	One hour after sugar by nasal tube, patient awake	8.20	87	48
6/1	8:00	Fasting	7.6	81	...
	12:00	Deep coma	14.6	50	...

Again, we found a marked rise in the oxygen content of the blood occurring with deep insulin coma. A striking feature in this case was the very low initial level of oxygen in the blood. The oxygen capacity of the blood in this patient did not seem to be impaired, as shown by the values of 16.7 and 14.6 volumes per cent obtained during coma. Further observations on the oxygen capacity are being carried out.

COMMENT

It has been observed that during the shock treatment of schizophrenia there is a consistent increase in the oxygen content of the blood. This increase follows the administration of the two drugs, insulin and metrazol, and appears to be the effective therapeutic mechanism common to both. It has also been noted that some schizophrenic patients whose illness has lasted as a chronic process for many years show very low values for the oxygen content of the blood.

Noteworthy in the data presented is a steady rise in the initial fasting levels of the oxygen

of the blood in the course of the treatment. This suggests that clinical improvement may be reflected in a gradual increase in the values for the blood oxygen. Furthermore, we think that in measuring the oxygen values during daily treatments we have a laboratory indicator for the effectiveness of the treatment as administered to the individual patient.

Since we see that these treatments which produce an increase in the oxygen content of the blood result in clinical improvement, we were led to the opinion that in schizophrenia there is a derangement in the gaseous exchange of the organism. From this point of view can be explained the reversibility of this illness, in which no consistent anatomic lesions have so far been reported. Many questions remain unanswered: has the brain cell lost the ability to remove oxygen from the blood stream, or does it require a much higher level of oxygen concentration in the blood for normal function? Is there a temporary or permanent change in the oxygen capacity of the blood of the schizophrenic patient? Are there changes in the oxidation-reduction systems in schizophrenia?

There is now a new point of view in approaching the psychoanalytic theory, in which schizophrenia is regarded as a process of regression, by drawing on the apparent parallelism of the gas equilibrium in the new-born at parturition and that during the treatment of schizophrenia. To this we add the observation that activation of archaic portions of the brains of schizophrenic patients during insulin treatment (the "activated psychosis" of Sakel) demonstrated by certain motor and tonic manifestations, is accompanied by an increase in the oxygen content of the venous blood. Investigation to clarify other factors pertinent to the problem is being carried on.

The authors gratefully acknowledge the fine technical assistance rendered by Miss H. Wolf in this investigation.

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After the manuscript was submitted, the article by Himwich, Bowman, Wortis and Fazekas in Science, **86**: 270, (Sept. 17, 1937) came to our attention. They report a similar change in gaseous metabolism in their patients undergoing insulin shock treatment, using blood obtained from the internal jugular vein where they have found the increase of oxygen. They referred such changes to a diminished oxygen utilization in the brain, notably in the cerebral hemispheres. Since our findings were made on blood obtained from the cubital vein we must assume that the increased oxygen content in the venous blood during insulin shock is general and not limited to any particular vein. Furthermore, it is difficult to harmonize a correlation of oxygen utilization with lack of blood glucose with the findings during metrazol treatments wherein increased oxygen content of venous blood is not associated with hypoglycemia and lasts several hours beyond the time of unconsciousness.

INJURIES OF THE SEMILUNAR CARTILAGES

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In view of the mass of literature which has appeared during the past few years on injuries to the semilunar cartilages of the knee, it would seem that there would remain very little to be said on this subject. This is probably true; nevertheless, these injuries are important, and are constantly with us; another paper dealing with them, therefore, even though it contains nothing new, if it should be fortunate enough to give rise to thought and discussion on semilunar cartilage injuries, has some justification for its presentation.

My experience in industrial and traumatic surgery covers a period of more than twenty-five years; during this time, I have performed arthrotomies on a sufficient number of knees to make me feel justified in drawing certain conclusions, and I have examined a great many more than I have operated upon. It is upon this experience that these few brief observations are based.

Injuries to the semilunar cartilages are important, not only from the point of view of the

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surgeon, but also from that of the medical man or general practitioner, who in most cases sees them first. They are fairly common, and are often overlooked. They occur frequently, although by no means exclusively as industrial accidents, and since they are highly disabling when untreated, are important from this angle. There is no condition in which proper treatment, when the indications are clear, gives rise to more gratifying results. And finally, there seems to be a misconception in the minds of many practitioners in regard to the results of treatment. Strange as it may seem at the present day, "my doctor told me not to allow anyone to operate on my knee, because the joint would get stiff," is a statement which is frequently heard when examining these cases.

The anatomy of the knee joint and of the semilunar cartilages is familiar to this audience, and need not be gone into; likewise the influence of age, sex and other factors requires no discussion. Let it be remembered that the overwhelming majority of all injuries affect the internal cartilage; the proportion of external cartilage injuries to internal ones is given by various authors as from 1 in 10 to 1 in 34.

In the great majority of cases, there is a history of trauma affecting the knee. A structural iron worker strikes his knee against a beam; a garage mechanic, while pushing a car on the floor of the garage twists his knee; a farmer, while ploughing, makes a misstep on rough ground; a young man is injured playing football; a motorcycle policeman's foot slips violently from the pedal while cranking his machine; a laborer carrying a heavy weight steps on a loose stone, etc. All of these various accidents possess one attribute in common, and that is, they are all essentially comparatively mild. It is not the more severe injuries, with damage to the bony and ligamentous structures of the joint, which give rise to disturbances of the semilunar cartilages, but the slighter strains which frequently appear to be relatively insignificant. A second attribute which most of these accidents possess is the presence of an element of torsion at the moment the injury occurs; in other words, the foot and leg are fixed, and the active force has a tendency to twist the leg about a longitudinal axis. I think that this is an important point in arriving at a diagnosis, and one which should be kept in mind in taking the history.

In these cases, if satisfactory results are to be obtained, a correct diagnosis previous to the operation is of the utmost importance. This statement is not to be taken to mean that this is possible in every case, for such is not true. Even Sir Robert Jones with, his great experience, made the statement that he was never surprised, in operating on a knee joint for injury to the semilunar cartilages, to find that his diagnosis was wrong; but the fact must be emphasized that each case must be exhaustively studied by every means at our command before urging operation with the assurance that this will result in a cure. This is particularly true of industrial cases. If the indications are clear-cut and definite, the results of operation will in all probability be very satisfactory; if the indications are indefinite, in many cases, the results will be disappointing. Here again, a qualification of this statement is necessary: there are undoubtedly cases in which an exploratory arthrotomy is justified; in such cases, however, the patient should be made to fully understand that the operation is exploratory in nature, and that under the circumstances, definite improvement may not follow and should not be too confidently expected. If the case is an industrial one, these things should also be made clear to the insurance carrier.

In arriving at a diagnosis and conclusion to operate in these cases, the first factor of importance is a careful and painstaking history. As has been said, in most cases the injury will be found to have been a relatively unimportant one. The patient should be questioned carefully in regard to the exact manner in which this injury occurred, and the forces acting at the moment of injury should be analyzed if possible. In the majority of cases, the history which will be obtained will be that the patient bumped or twisted his knee in some way; following this, occasionally the joint may have locked immediately, or it may later have become very painful. If locking took place, the history will often reveal that this was relieved after manipulation by a fellow-workman; however, the joint remained painful, and as the result of a rapidly increasing effusion, became much swollen. There was a temporary total disability of from a few days to a couple of weeks, following which the patient returned to work. After a longer or shorter interval, another attack of locking may have occurred, followed by pain and swelling in the knee, and another

short period of temporary total disability. If the case has persisted over any considerable length of time, the attacks of locking have usually become more and more frequent.

This triad of symptoms, pain, swelling and dysfunction, is very characteristic. Unfortunately for certainty of diagnosis, however, locking of the joint is very frequently absent, and such cases require very careful consideration of the history, close weighing and evaluation of all signs and symptoms, and the exclusion, so far as possible, of injuries to other components of the articulation which might give rise to similar signs and symptoms.

Physical examination of the knee itself should include comparative measurements of the opposite knee, and the affected knee will usually be found to be slightly larger than the uninjured one, due to the presence of a greater or lesser amount of fluid in the joint, although in the chronic cases, fluid is often entirely absent. The knee is palpated to determine whether or not any free bodies can be felt, and also to detect the presence of tender areas. One of the most constant findings in cases of cartilage injury is the presence of a circumscribed point of tenderness at the site of attachment of the anterior end of the cartilage. The range of motion is determined by manipulation. Naturally the presence of concomitant signs of joint injury, such as thickening of the synovial membrane, abnormal mobility, atrophy of the quadriceps femoris, etc., will be noted.

In the examination, the taking of x-ray films should never be neglected. In cases of cartilage injury, the films are practically always negative. That is to say, if the joint is otherwise healthy, with simply a detached or injured cartilage, no x-ray evidence of this will be found. If the case is an old one, occasionally lime salts have been deposited in the detached cartilage, which then becomes visible; such cases, however, are rare. I have not been fortunate enough to see one. Efforts have been made to visualize the cartilages by distending the joint with air or other gases, and this method of procedure has seemed to have been somewhat successful in certain hands. I have tried it in a few cases, but so far, my personal experience has been too limited for me to express any opinion either as to its value or inocuousness.

Nevertheless, the x-ray films in certain cases may give valuable information as to the presence or absence of osteoarthritic changes within the joint. If such changes are present, and the signs indicating cartilage injury are more or less equivocal, caution should be exercised before recommending operation, because the results might be disappointing to both the patient and the surgeon.

In the treatment of semilunar cartilage injuries, the question as to whether conservative or operative measures should be employed should not present much difficulty. The only form of therapy which offers any reasonable hope of permanent cure, especially in the recurrent cases is operative. It is true that it may be well, in cases of very recent injury, seen immediately after the accident to try the effect of conservative treatment for a short time. This should be done by putting the knee at absolute rest, by the removal of effusion if this does not subside spontaneously within a short time, and by tight bandaging. Occasionally a case will be encountered where such treatment will be followed by complete recovery with no recurrence of symptoms. However, such cases are the exception, and not the rule.

If after this treatment, the patient returns to work, and soon begins to have a recurrence of symptoms, I can see no reason for delaying operation. As a matter of fact, the sooner operation is performed in those cases in which it is indicated, the better. Changes in the interior of the joint will not be so marked, and recovery will be much more complete and rapid.

In all cases, the indications for operative treatment should be as clear as possible. An arthrotomy of the knee-joint is a procedure not to be lightly undertaken, as it is distinctly a major operation. Every case must be thoroughly studied, and the diagnosis must be made as accurately as possible before operation is advised. Otherwise there is likely to be a dissatisfied patient and an embarrassed surgeon.

Turning now to a consideration of the operation itself, it must be emphasized that for successful results, a rigorously aseptic technic is absolutely necessary. The statement has been made by Timbrell-Fisher that "a stiff knee after an operation for internal derangement is a reproach. Resulting loss of limb is a surgical tragedy; whereas loss of life from the same cause is a surgical disaster."

The patient should enter the hospital 48 hours previous to the day of operation. The day of entrance, a careful surgical preparation is made of the operative field, which is repeated on the following day, and which is carried out for a third time after the patient is on the operating table. All operations are done under a tourniquet. In my work, I have abandoned the use of the small curved incision frequently employed. The more of these cases I see, the more I appreciate that there is frequently associated pathology which can be easily overlooked through the small incision; consequently, I now use the long internal or external lateral incision, depending upon which cartilage is affected.

The damaged cartilage is removed in its entirety, a proceeding which offers no difficulty with this exposure. The joint is then carefully explored, not neglecting the suprapatellar pouch, in which foreign bodies are often found. During the entire operation, nothing except sterile instruments is put into the joint; there is no occasion for inserting the fingers. Likewise, with a properly applied tourniquet, no sponging is necessary. If it does become necessary to sponge, only wet gauze is used, and this very gently. The amount of postoperative effusion, in most cases, depends directly upon the amount of trauma inflected upon the articular cartilage and synovial lining. At the conclusion of the operation, closure by layers follows.

After the dressings are applied, a thick layer of absorbent cotton is placed entirely around the knee, and a tight bandage is applied. This furnishes an elastic compression. Not until all this is done is the tourniquet removed.

I use no splints or plaster casts after the operation, having discarded them a long time ago. They serve no useful purpose, so far as I can see, because immobilization is not desirable in these cases. For the first few days, there is usually so much discomfort that the patient will carefully avoid motion as much as possible; as the pain and soreness subside, he will gradually begin to move the joint himself, which is eminently desirable. From the second day, patients are urged to move the patella by alternately contracting and relaxing the quadriceps muscle as much as they are able. Morphine is given freely for the first few days, as there is always a great deal of pain immediately after the operation.

The question of postoperative effusion is in most cases directly dependent upon the amount of trauma inflicted upon the interior of the joint at the time of operation. However, some joints will react more than others, and at times, even after the most gentle handling, effusion will occur. Ordinarily, this soon subsides, being moderate in amount; if it is excessive, I have no hesitation in tapping the joint and removing the fluid.

Ordinarily, the sutures are removed on the eighth or ninth day, and this constitutes the first dressing, unless there is some indication to the contrary. Upon removal of the sutures, the cotton wrapping is discarded.

The patient is allowed up in a wheel chair whenever he feels so inclined, which is usually some time during the first week; all the weight bearing which the patient can stand with crutches is begun on the tenth day, and he is encouraged to bend the knee as much as he is able. Most patients are able to resume their ordinary occupations at the end of six to eight weeks, although more time may sometimes be required in the case of older individuals.

THE TREATMENT OF HYPERTENSION WITH SPECIAL REFERENCE TO THE NEWER KNOWLEDGE OF THE CAUSES OF HYPERTENSION

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If we are to judge from the large number of cases seen in the clinics and from the opinions of older physicians, hypertension is increasing in frequency and the etiology and treatment becomes a challenge to the medical profession. Patients with hypertension are often neglected in our hospitals and clinics or left entirely to their own devices; such treatment as is given is often indifferent or merely routinistic. Yet there is hope that hypertension and other diseases of a vascular nature will in the near future receive the attention that they rightfully deserve; occasional signs point in that direction. In spite of the gaps in our knowledge about this disease, there is much that is known and one of our chief problems is to disseminate our present knowledge and to cultivate interest. At the present time, hypertension must be considered an incurable disease, yet the treatment is far from a thankless task and much could be done for

these patients, if they received the same care as do, for instance, diabetics.

The discussion of the treatment of hypertension will be divided into 5 parts:

1. The treatment of the associated or etiologic factors.
2. The action of drugs and diets on the blood pressure.
3. The treatment of the complications.
4. Other forms of treatment.
5. The results of treatment in 100 consecutive cases.

The Treatment of the Associated Diseases or Etiologic Factors.

In the treatment of hypertension it is important to consider the possible etiologic factors and any associated or aggravating condition that may be present. A full discussion of etiology is beyond the scope of this paper, the reader is referred to the works of Kylin,[1] Riesman,[2] King[3] etc. Hypertension is commonly associated with the following aggravating conditions most of which are considered etiologic by certain investigators: obesity;[5-6] diabetes;[7-11] thyrotoxicosis;[12-16] imbalance of the vegetative nervous system[17] and psychic factors;[18-20] the menopause[21] and less commonly with mitral stenosis[22-23] (rheumatic endocarditis). Often when the hypertension is associated with some such disease, the hypertension is relegated to the background or the blood pressure remains unrecorded for days or weeks. It is surprising to see the response in some of these patients when the whole picture is subordinated to the primary vascular phenomenon. Cerebral symptoms suggestive of tumor may disappear in a few days with dehydration treatment; epigastric distress often ceases to be a foreboding omen and vanishes as the circulation improves.

In the obese a reduction in weight will often cause a fall in blood pressure. A word of caution should be added about low calorie diets that are maintained too long, because avitaminosis or a negative calcium balance may result, therefore such ingredients should be added. Strang's diets are of value in this respect because mineral salts and vitamins are supplied. Thyroid extract is a dangerous drug to use in hypertension. Dinitrophenol is tabu.

The association of thyrotoxicosis and hypertension, which will be referred to as "thyroid hypertension" has been discussed by several investigators.[12-18] In this paper, it will be discussed together with imbalance of the vegetative nervous system and psychic factors because it is believed that there is a relation between these. Not enough work has been done on this subject to give proper guidance in the treatment but a few principles can be laid down. A B.M.R. should be taken on most men and all women who present themselves with hypertension. An elevated B.M.R. is undesirable in hypertension because it increases the blood velocity thereby putting an extra burden on the heart. There are several drugs to reduce the B.M.R., iodine,[24] diiodotyrosin,[25-28] tyronorman,[29-30] hamocrinin,[31-33] etc. The last two drugs I have had no experience with, they are used in Germany and the reports are good on tyronorman but the value of hamocrinin is doubtful. Iodine must be used with caution and if one is dealing with thyrotoxicosis secondary to oversecretion of the thyreotropic hormone of the hypophysis, which the syndrome "thyroid hypertension" may represent, iodine is best avoided because it may bring the picture of true Basedow's in the foreground and the disease may go over into it.[24-34] The drop in the B.M.R. is usually followed by a drop in pulse, but if the pulse remains elevated then quinine may be tried, in any event it is a valuable adjuvant. Riesman[2] claims good results for this type of case with corpus luteum extract. For the nervousness, tremor and fidgetiness, the bromides, belladonna, calcium and phenobarbital are of use. Phenobarbital appears to exert its action on the midbrain (diencephalon) which has assumed importance in thyroid disease and hypertension.[35] Scharrer and Gaupp;[36-37] also Voss[38] have called attention to a "zwischenhirndruse" (midbrain gland) because some of the cells contain colloid and because of its ability to store iodine in greater concentration than the rest of the brain. Speaking of the diencephalon leads us up to the importance of the vegetative nervous system in hypertension.[17-20, 39-44] Olmer and Carbonel[40] believe that without a disequilibrium between the sympathetic and the parasympathetic nervous systems it is difficult to explain hypertension because the autonomic system would compensate. Page[42] states that such symptoms as hot flashes, sweats, salivation and tachycardia are very suggestive of diencephalic stimulation with imbalance of the vegetative nervous system. He believes that this may be a factor in the production of

hypertension. Sunder-Plassman[43-44] demonstrated morphologically an intimate relation between the vegetative nervous system and the individual cells of the thyroid gland. There is also a center for the vegetative nervous system in the hypothalamus. Since the function of the sympathetic and parasympathetic nervous systems are so closely interwoven, it is difficult to conceive of a pure sympathitonia or vice versa, and in most instances we are probably dealing with a sympathitonia of certain organs and a vagotonia of others. Therapy directed at quieting all parts of the nervous system is therefore indicated. Ergotamine tartrate is a sedative of the sympathetic and belladonna acts similarly on the parasympathetic nervous system. These drugs can be combined with phenobarbital (bellergal) and are worthy of a trial in select cases. For the disturbing symptoms associated with the hypertension the results are often gratifying. In recent years, calcium has assumed considerable importance as a sedative of the vegetative nervous system. Several investigators[45-47] have reported excellent results with it. In treating patients with vasomoter disturbances Majerus[48] advises that belladonna be used first to be followed by calcium salts. Gloor-Meyer used calcium bromide in 60 cases of vegetative neuroses and hypertension and states that the nervousness, tiredness and exhaustion were quickly relieved. Chrometzka used calcibronat in hypertension and observed a drop in blood pressure in all cases, a drop of 80 points being occasionally observed.

The importance of worry, mental strain, anxiety and other psychic factors in producing hypertension has been demonstrated and such factors must play a very great part in the etiology. Reference is made to the works of Mühl[17] Fahrenkamp;[18] also Raab. The physician who undertakes to treat patients with hypertension must make an effort to uncover such mental disturbances and help correct them, otherwise all therapy will be useless. Mühl[17] cites a case of hypertension associated with nephritis following hyperthyroidism which resisted all treatment until a chronic state of anxiety was corrected after which the blood pressure dropped and the patient remained well for 3 years. Murray[20] claims that in men, neurocirculatory asthenia tends to go into hypertension later in life.

With such treatment the immediate results in the thyroid hypertension syndrome are often satisfactory; the pulse, blood pressure, the B.M.R. and the general weight curve are used as guides. However, the more severe cases may sooner or later require additional treatment in which case x-ray[49, 50] over the thyroid gland, hypophysis and the adrenals may be tried (v. i.). The value of thyroidectomy in this type of case cannot be evaluated at the present time because too few complete case histories are available. The few cases available show that results of thyroidectomy in producing a drop in blood pressure have been disappointing,* even so, in certain select cases, the good effects from a lowered B.M.R. may be of value. Against this must be considered the fact that thyroidectomy acts as a stimulus to the enlargement of the anterior pituitary as was shown by Rogawitsch.[51] Thirteen case reports[52-58] of the thyroid hypertension syndrome treated by thyroidectomy show that in 7 the blood pressure continued to rise after operation, there was a drop in the blood pressure in 3 cases and in 2 there was no change. One patient died as a result of the operation. This probably means that in the syndrome of "thyroid hypertension," the hypertension is not the result of a dysfunction of the thyroid gland, as is the opinion of certain workers, but that it is due to some other factor: as a matter of fact the thyroid dysfunction itself may also be secondary to this other factor. Whereas ordinarily thyroidectomy will arrest thyrotoxicosis, in these cases the disease appears to make progress in spite of the reduced B.M.R. and by eliminating the thyroid gland we are not getting at the seat of the disease. Hypothetically, this might be explained in the light of Kylin's recent view, that a causal factor in hypertension is oversecretion of the hormones of the anterior hypophysis, since excessive secretion of the adrenotropic and thyreotropic hormones would explain the thyroid hypertension syndrome. (v. i.).

Hypertension is occasionally seen with myxedema. Treatment for the myxedema is all that is necessary and the blood pressure will often return to normal. I have seen two such cases.

The Action of Drugs and Diets on the Blood Pressure. After the associated conditions have been properly cared for, the blood pressure will still remain high in many and should be brought down if possible. For this purpose, many drugs and diets are popular. Space does not permit a

*S. Weiso has reached the same conclusion, see note at end of this paper.

complete review of these drugs some of which have much to recommend them but a few will be discussed.

Iodides are very popular in hypertension. Burger and Mobius[59] have shown that the blood iodine is increased in hypertension and advise against its indiscriminate use. Weiss[60] claims that the use of nitrites is illogical and may be dangerous. *Digitalis* is advised by Fahr.[61] In the nocturnal cardiac asthma and where the history and physical findings are suggestive of myocardial weakness, digitalis should always be given a trial. Combined with calcium it works better; however, if the patient is digitalized, calcium by injection is contraindicated and should be given by mouth,[62] if at all.

Calcium and atropine were used with good results by Kylin but Altnow and O'Hare failed to confirm his findings. Bram,[63] also Schaefer[64] reported some good results with progynon and theelin in hypertension of the menopause. Stieglitz,[65] using *bismuth subnitrate*, observed a fall in blood pressure in 75% of his cases but Bruen's[66] results were equivocal.* *Mistletoe or viscum album*[67-70] causes a fall in blood pressure, also improvement in the tinnitus and vertigo. It is a mild drug and good to start with while a patient is being observed or where stronger drugs are contraindicated. *Pancreatic* extract was used by Halprin:[71, 72] also Santenoise and both claim a fall in blood pressure after its use. Halprin claims that it serves to detoxify the products of decomposition absorbed from the gastro intestinal tract. Althausen and Kerr[73, 74] observed a fall in blood pressure with the use of liver extract. They also speak very highly for *cucurbocitrin*. *Acetylcholin*[75] has only a transitory effect on the blood pressure but is of value in giddiness, spasms and defective vision. Barath[76] claims good results for papavarine in select cases. Hoegler et al.[77] were able to show that veronal was effective in reducing the artifically produced "Kaolin hypertension." (v. i.) Padutin[78-80] has an anti-adrenalin action and was shown to cause a fall in blood pressure. Riesman,[3] also Bryant[81] claim good results for *veratrum viride*. (v. i.)

The thiocyanates are a great therapeutic aid in hypertension.[82-89] Barker[82] advises a dose of 0,3 gm. daily of the potassium salt which is usually followed by a decrease in the nervousness and headache in 5 to 7 days, at which time the blood cyanate level is about 5 to 7 mg. per 100cc. A fall in blood pressure of 30-50 mm. is observed in 10 to 15 days. The dosage is then cut down to 0.3 gm. 3 or 4 times a week and when the blood cyanate level reaches 10 mg. the drug may be withdrawn. Barker treated 45 patients with the use of cyanates and only 10 failed to respond. Untoward effects marked by vascular collapse, weakness and cerebral thrombosis was observed in 2 cases with final recovery. However, several investigators[86] consider the thiocyanates toxic and too dangerous to use in the advanced cases.

Among the diets advocated in hypertension the low salt is deservedly most popular. A low salt diet of 1.2 gms. a day will reduce the circulating blood by 19%, a point to keep in mind in cases of pulmonary edema and congestive heart failure. Blaisdell[90] used a low salt diet on 35 patients keeping the urine chloride down to 0.5 gm. a day and the protein down to 80 gms. a day. There was decided relief from symptoms and a drop in the blood pressure and in some cases it remained down. Robert[91] claims that a low salt diet causes drainage and advises its use in hypertension, but he adds a word of caution about the possibility of uremia under such a regimen. Fahr[61] considers the low salt diet an excellent therapeutic measure and advises horse radish, pepper, vinegar and flavoring to make the food appetizing.

There is a widespread belief among lay people that excessive protein is undesirable in hypertension and kidney disease, and there may be some grounds for this belief.[92-95] It is known that in Germany during the war, when proteins and fats were scarce, that as a group the hypertensives and nephritics were benefited and the incidence of eclampsia was lessened. We know very little about this subject but if we can draw a general conclusion from recent articles in the literature, it might be said that there is a definite and important inter-relation between hypertension on the one hand and nutrition and intestinal intoxication on the other. A gastrointestinal influence on the blood pressure has been observed by several investigators. Mills observed that substances that detoxify the bowel contents cause a drop in blood pressure. Gehlen[92] in a study of 165 patients states: "ein abhangigkeitsverhaltnis der blutdrucklage von dem augen-

*In a late report Bruen got some good results with bismuth sub-nitrate.

blickes zustande einer magendarm affection bestand." He quotes Hirose et al. who were able to demonstrate a drop in blood pressure when large areas of the intestinal circulation were blocked. Halprin's[71-72] reference to toxic agents in the G. I. tract that might cause elevation in blood pressure has been mentioned. Further investigation along this line may produce some very interesting and useful information.

THE COMPLICATIONS

The complications of hypertension will be considered under: *endocrine, infectious, coronary, cardiac, cerebral, gastro-intestinal* and *renal.*

The *endocrine* complications have already been discussed in part and will be further discussed under "other forms of treatment." Infections are not a true complication of hypertension but may occur in its course. There is some evidence at hand that intercurrent infections influence the course of hypertension unfavorably. Raab;[97] Siebeck; also Barach[21] stress this point and the latter claims that the tonsils are often enlarged in persons with a constitutional tendency to hypertension and advises their removal. Siebeck claims that infections aggravate an existing hypertension and such patients should use necessary precautions.

Fahr[98] goes to some length to show that *coronary sclerosis* is very common in hypertension. He estimates the incidence at close to 90%. He uses ethylene diamine or other coronary dilators in nearly all of his hypertensives. This high incidence of coronary sclerosis has not been substantiated by other writers. Kirschbaum[99] gives the incidence as 38%. However, where it is suspected, the drug is certainly worthy of a trial.

The chronic *cardiac* complications are familiar and need not be considered here. For the acute cardiac failure which may appear suddenly 0.5 mg. strophanthin[100] may be given i. v. followed by 15 to 30 min. of digitalis every 4 to 6 hours. Hypertensives bear it well and when the heart is greatly enlarged it is particularly indicated. At this point it is well to mention the use in congestive heart failure of salargyn or the new mercurial diuretic, novurit, even when digitalis has failed. The latter can be given per rectum as a suppository. For the breathlessness, provided it is not due to asthma, morphine often acts like a specific.

Under *cerebral* complications we have beside hemorrhage, hypertensive encephalopathy and pseudo tumor (Foerster) a condition that closely resembles brain tumor. It is important that these conditions be kept in mind because these patients are occasionally needlessly operated on, Ellis advises in encephalopathy with convulsions, coma and even paralysis (which he says may occur without uremia and are of vascular origin) venesection as the sheet anchor in therapy and later the removal of spinal fluid until it runs like a slow drip. He also advises intravenous hypertonic salt solution and morphine. Magnesium sulphate may be given at first by mouth one or several ounces daily of 50% solution until the blood pressure drops, if comatose, then 2% by vein until the blood pressure, taken on the other arm, has dropped. If there is evidence of renal damage magnesium salts are contra-indicated in which case glucose 50% by vein may be given, but if it is used several times it is best to precede it by some dehydration measure as purgation. Since Bryant[81] has used veratrum viride so successfully in controlling the high blood pressure and convulsions in eclampsia, it is worthy of a trial in hypertensive encephalopathy. It can be given as veratrone (P. D.) 5 to 15 min. by hypodermic and repeated as often as necessary to keep the blood pressure down. For further details about this treatment the original paper should be consulted.

At this point it might be mentioned that cerebral edema should be kept in mind as a possible cause of drowsiness, sluggish mental activity and stupor so often seen in hypertension, and dehydration therapy[101] should be instituted. This treatment was used extensively at Temple University in cases of skull fracture, shock and eclampsia, etc., with very promising results. The treatment consists of spinal puncture, hypertonic solutions and purgation, with limitation of fluids and a dry low salt diet. Puppel[102] used a similar treatment in eclampsia with good results. For the details one must consult the original papers.

The *gastro-intestinal* (G. I.) symptoms in hypertension are of greater importance than is ordinarily believed. I have discussed these symptoms at another place;[103] they will be briefly mentioned here. A pathological condition in the alimentary tract such as ulceration in the form of peptic ulcer, gastric erosions or colitis, is quite

common in hypertension and with it goes the possibility of hemorrhage. The gastro-cardiac syndrome is seen, also a uremia syndrome which might be referred to as "gastric uremia" (Ryle).[104] Unfortunately the present treatment for gastric hemorrhage is discouraging, however, several new drugs have been mentioned in the literature and deserve a trial in the intractable cases. Vitamin C,[105-107] theelin[108] and calcium have been used with success in various types of bleeding. For the substernal pressure and the epigastric distress seen with the gastro-cardiac syndrome small doses of digitalis is often of value; for the flatulence and belching, valerian may be of use, also, charcoal. Gastric uremia is discussed under renal complications.

In the discussion of the *renal complications,* we shall limit ourselves to preuremia and uremia. Under uremia we must consider the "true uremia" due to renal insufficiency and extrarenal uremia. For the differential diagnosis reference may be made to a paper by Schoenborn.[110] A uremia syndrome may depend on several extra renal factors, such as: Gastro intestinal intoxication,[111] acidosis,[111, 112] salt deficiency,[111-113] pancreatic insufficiency,[114] excessive water loss,[111] post operatively, with severe gastro intestinal bleeding,[115] and in diabetic coma.[116] The true uremia is seen only in a small number of cases as a complication of hypertension and the treatment by use of restricted diets, elimination and rest has been widely discussed. However, in many cases the kidneys are normal or only partially damaged, and the extra renal factors may play the dominant role in bringing about the uremic picture and the fatal outcome. An attempt at diagnosis and treatment should always be made because if the patient is tided over the critical period recovery may ensue. Often such a syndrome is ushered in with nausea and vomiting with or without abdominal pain (gastric uremia).[113, 116-119] The urea N. is usually elevated but it may be normal[120] the course may be rapidly downhill with death in what appears to be uremia. It is possible that the loss of salt by vomiting is a factor in producing this picture.

As for the treatment against the nausea and vomiting gastric lavage is often efficient, bismuth with cocaine are of value, occasionally in select cases, salt infusions may work well.[121] (v. I.) Such patients should not be allowed to develop acidosis and the urine should be tested regularly and kept neutral or slightly alkaline by giving citrous fruit juices or a mixture of sodium and potassium bicarbonate; when acidosis is present, glucose should be given. Anuria is often present. In such cases, a reduction of plasma bicarbonate is usually found and a mixture of 2 grams each of potassium citrate and sodium bicarbonate with flavoring in an ounce of water given by mouth, one ounce per hour, has been found successful. Bannick and Keith[122] claim that in severe oliguria venesection alone or followed by an injection of 500cc. of 20% dextrose is of benefit.

Much has been written about uremia due to salt deficiency; the use of salt in this condition in common and much has been claimed for it.[123-125] In France, this is recognized as a common cause of uremia where it is termed, "uremie par manque de sel." However, to determine the presence of a true hypochloremia is difficult. Mellinghoff[126] states that in uremia due to hypochloremia as much as 100 grams of salt may be given before appreciable amounts appear in the urine, but this test can be accepted with reservations only. The blood chloride value may also be misleading because in the course of certain diseases the sodium and chlorine ions are not excreted in the urine in molecular proportions but sodium is retained and the chlorine excreted.[127] In cases of coma it is the migration of the sodium ion which is probably most important because under such conditions according to Keller[128] sodium ions enter the electropositive organs such as the liver, kidneys, brain and blood corpuscles. Obviously the blood chloride value gives no definite idea as to the amount or behavior of the sodium and the sodium may be retained because it is entering the electropositive organs in large amounts. Farkas[130] claims that in salt retention water should be given, in hypochloremia more salt, and in normal salt metobolism Ringer's solution. In hypostenuria, salt should be given because the kidney cannot dilute the urine when large amounts of fluids are given, and salt may be lost. Barath[131] believes that in preuremia the low blood calcium may lead to tetanic spasms and that the infusion of large amounts of salt solution may lead to eclamptic convulsions or high fever. Minder[132] claims that in certain cases of hypochloremia the azotemia may be corrected by salt; but when the hypochloremia is not primary but follows severe renal insufficiency, the salt therapy is useless and hastens the lethal

outcome. Csapo[133] states that there is a true hypochloremia and salt is of value in such cases, but there is also a pseudo hypochloremia where the chlorine passes into the blood corpuscles and salt is not indicated. That salt may actually be harmful has been demonstrated by Andrews on dogs and by Keller[128] who quotes Phlomm on 2 deaths resulting from salt infusions. On the other hand that salt is of definite value in certain cases of uremia has been amply demonstrated; but most authors evade the question of how to diagnose the true hypochloremia when it exists.

In the uremia due to intestinal intoxication Fantus[111] advises starvation for 1 day followed by a diet of 300 gms. of ripe bananas and 100cc. cream in A. M.; at noon 200cc. cream soup, 300gms. banana, and 200cc. milk, a total of 1335 calories. In 2 or 3 days follow by a lacto-vegetarian diet with large amounts of potatoes because of their alkaline ash. In the group due to hypohydration, lavage the stomach with 2% bicarbonate of soda and give by duodenal tube 1 or 2 liters of hot water at 110 degrees F. In uremic coma, he advises early venesection to be repeated in 4 days, and adds a word of caution against the use of blood transfusion. Dextrose solution to be given by vein and followed by lumbar puncture if there is no response. Schwarzman[134] claims that in the "uremia syndrome" (v. s.) the use of an extract from lung or pleura called "histosan" was found to give good results. Hammerschlag[135] claims that the use of liver extract in the extrarenal uremias, particularly those that come on after excessive water loss and post operatively, is often associated with striking results and in some instances may be life saving.

OTHER METHODS OF TREATMENT

The Role of the Brain Structures adjoining the third Ventricle, and the Vegetative Nervous System in the Etiology of Hypertension and the use of X-rays to these Regions:

There is some evidence that hypertension is associated with an irritation of the brain structures adjoining the third ventricle, which includes the hypophysis, centers for the vegetative nervous system, and centers for water and salt metabolism (according to Scharrer[136, 137] in the tuber cenarium) and this may play a role in the etiology of hypertension although other etiologic factors are thereby not excluded. In this connection, the work of Kylin;[138] Cushing;[139–144] Loeser[145] and others[146–157] is of interest. Kylin[138] considers that a causal factor in hypertension is the oversecretion of the hormones of the anterior lobe of the hypophysis; in other words hypertension is the antithesis of Simmond's disease in which there is atrophy of the hypophysis. The high blood pressure may then be due to an oversecretion of the adrenotropic hormone of the hypophysis which acts as a stimulus to the adrenals, while the increased B.M.R. so common in hypertension may be due to excess secretion of the thyreotropic hormone. An increased amount of the hypophyseal hormone (prolan) has actually been demonstrated in the urine in cases of hypertension also eclampsia by Lücke, Heim,[158] Bentivoglo[159] and others. Cushing's syndrome in which hypertension is associated with basophilic infiltration of the neurohypophysis has received much confirmation in the last two years and lends support to this view. The sex hormones, ovarian hormone in the female[160] and the hormone of the germinal epithelium in the male, are the antagonists of the hypophysis; and the fact that hypertension sets in so frequently during the climacteric when the sex glands begin to atrophy also draws attention to the pituitary. Loeser claims that with the slackening of the sex glands activity there is an increase in the thyreotropic substance of the anterior hypophysis through which an excitation of the thyroid gland may be called forth. In 1920 Berblinger[161] showed an increase in the basophilic cells of the hypophysis in cases of nephritis and in contracted kidney; this was supported by Skubiszewski.[162] The association of malignant nephrosclerosis with a basophilic adenoma of the anterior hypophysis was stressed by MacMahon, Close and Hass[162] and later by other investigators. Ahlstrom[164] found a basophilic infiltration of the neurohypophysis in 96% of his cases of hypertension and in only 50% of his non-hypertensive group. In a similar study, Marcano[165] found infiltration in the posterior hypophysis in 19 out of 49 of his hypertensives and in one out of 22 in a non-hypertensive group. Scriba[166] failed to substantiate these findings. Other investigators stress the importance of irritation of the centers of the vegetative nervous system as a cause of hypertension. Hoegler et al. were able to produce hypertension by injecting kaolin into the third ventricle (Kaolin hoch druck) and by injecting

irritating fluids into the third ventricle Marx produced hematuria and cylinduria. According to Marx[167] the cerebrospinal fluid from a nephritic patient if injected into the third ventricle of experimental animals will produce after a latent period, anti diuresis, hypertension and hematuria, this occurs after denervation of the kidney which indicates that a hormone is responsible. Marx further claims that the concentration of a pressor substance in cases of hypertension is much greater in the cerebrospinal fluid than in the blood which would indicate that its source is in the central nervous system. Page states that the symptoms of hypertension such as hot flashes, sweats and tachycardia are very suggestive of diencephalon stimulation and thinks that this may be a factor in its production. Draper;[167] Langer,[19] also Mühl[17] investigators who give more consideration to the constitution factor in disease, all suggest that irritation of the vegetative nervous system may be a cause in hypertension.

Without stressing this subject any further it should be apparent that there is enough evidence to justify such therapy as irradiation of the brain in the region of the third ventricle and the ganglia of the vegetative nervous system. Hutton[168-170] advocates irradiation of the hypophysis and the adrenals and claims good results in 75% of his cases. Similar results were reported by Jamin,[176] Werner[172] and others.[173, 174] Langer advocates also paravertebral irradiation. It is quite possible that the benefits from x-ray over the third ventricle are due more to the quieting action of the rays on the sympathicus rather than their action on the hypophysis. (Carullo et al[175] have shown that x-ray over the sinus carotis will also result in a drop in blood pressure.)

Surgery: Mention has already been made of the germinal epithelium of the tests and its importance in checking the secretion of the hypophysis. Niehans[176] claims that placing a ligature in the groove between the testes and the epididymus stimulates the germinal epithelium and is followed by very good results such as the disappearance of headache and vertigo, improvement in the circulation, a reduction of the arterial tension to normal and an improvement in the urinary disturbance. He has treated 400 cases with good results.

Decourcy, Decourcy and Thuss[177, 178] removed about three-fourths of both adrenals in 8 cases of hypertension. They reported a drop in blood pressure of 70 to 90 mm. systolic and 40-50 mm. diastolic in every case, and that the symptoms disappeared. Oliver and Meillere[179] removed the adrenal glands in three cases of hypertension, the results were unsatisfactory. Adson and Brown[180] did a bilateral section of the anterior spinal nerve roots from the sixth thoracic to the second lumbar inclusive. They claim that a drop in the blood pressure was observed after the operation. Graybiel and White[181] claim that the present surgical treatment does not rest on a scientific basis, and the decrease in vascular tonus consequent to destruction of sympathetic innervation is regained by regeneration of the nerves or by decreased susceptibility to circulatory hormones.

Iontophoresis (electrophoresis) has been used by a few investigators with favorable results.[182, 183] Doane used histamine iontophoresis in vasospastic states and has also observed a drop in blood pressure. Ehrenwald[185] has also observed a drop of 40 mm. in the first 5 minutes of treatment which endures 5 to 6 hours.

RESULTS OF TREATMENT

One hundred patients were selected who were observed from 6 months to seven years and who were under treatment long enough to be of value in this study. Of these 80% showed a fall in blood pressure shortly after treatment was begun. In the remaining cases, although the blood pressure was not influenced, relief from symptoms was in most instances experienced. This would indicate that in most cases of hypertension the blood pressure is not fixed but labile, and can be brought down at least temporarily by medication. In most instances when treatment was withdrawn, the blood pressure rose again but in a few cases the blood pressure remained down for months without any treatment. Various drugs were used and the treatment modified to meet the individual case. As our experience with these patients increases more attention is being given to the nutrition and well being of the patient, complications are cared for and more attention given to the associated symptoms and complaints.

Potassium thiocyanate was found to be a very reliable drug for reducing the blood pressure and for the relief of symptoms. It was frequently found effective when other drugs had failed

and failed only in a small percentage of cases. In a few others, it was so toxic that the drug had to be withdrawn. A fall in blood pressure of 70 mm. was not uncommon with the use of this drug. The drug should only be used in carefully selected cases.

Calcium was found a valuable adjuvant in the treatment and a marked drop in blood pressure occasionally witnessed. In these experiments, it was combined with belladonna or with digitalis depending on the case. For the associated symptoms, it was frequently resorted to, especially if they suggested an allergic basis. In one case with a blood pressure of 245 mm. systolic and severe nocturnal "choking" and shortness of breath, the combined use of digitalis and calcium by mouth for a period of 2 months caused a drop in blood pressure to 165 mm. and almost complete subsidence of the symptoms.

Phenobarbital produced a drop in blood pressure in a high percentage of cases but the fall was only moderate, usually from 10 to 40 mm. It is particularly valuable for the nervousness in the thyroid hypertension group.

Veratrum viride produced only a slight drop in blood pressure when given by mouth. On the tinnitus and giddiness it had a favorable effect. The drug appears to act in somewhat the same way as viscum album (mistletoe) and might be used to replace this more expensive product.

Digitalis in such cases as has previously been mentioned (v. s.) was found reliable. In such cases, the blood pressure dropped as improvement occurred or it remained unchanged. In 15 out of 18 cases, there was a drop in blood pressure with the use of digitalis.

The *nitrites* after a short trial were abandoned as it was felt that the patients were not being sufficiently benefited by their use and that better methods were available.

Potassium iodide was used in 12 cases and a marked drop in blood pressure was observed in half this number; in two or these, the drop exceeded 60 mm.

The *low salt diet* was tried in 2 cases with good results. In the first case, the systolic blood pressure dropped rather sharply from 190 to 150 mm. but in the course of 6 months the blood pressure was back again at the starting point only to fall again at a later date. In the second case, a moderately obese woman of 55 with cerebral manifestations and a blood pressure of 206 systolic and 140 diastolic was placed on a low salt diet and calcium gluconate by mouth because edema of the brain was suspected. The result was very gratifying; there was a sharp drop in weight and the cerebral symptoms disappeared; there was also a slight drop in blood pressure. Bellergal was used for the nervousness and the other annoying symptoms in 2 cases with good results. Progynon by injection was used in one case of a menopausal syndrome with elevated diastolic pressure. A lasting beneficial result was obtained for nearly a year accompanied by a slight drop in blood pressure. Venesection was used in one case with a blood pressure of 272 systolic and 140 diastolic; 300 cc of blood was withdrawn which was followed by a drop of nearly 100 points in the systolic blood pressure. The blood pressure gradually rose and at the end of the first month had regained the original level. Among hospital patients bed rest often resulted in marked lowering of blood pressure without the use of any drugs or diets.

An investigation was made to determine whether the drop in blood pressure was in any way related to the height of the systolic blood pressure. This was done by dividing the cases into 4 groups. In the first group were included those with a systolic blood pressure below 179; in the second group from 180 to 209; third group 210 to 249; fourth group 250 and over. The number of times that a drop in blood pressure of 40 mm. or over occurred was recorded for each group. The results are shown in the table below, and it appears that the degree of the drop in blood pressure is related to the height of the systolic blood pressure.

B. P. Group	Fall of 40 mm, or more Percentage
Up to 179	14%
180 to 209	33%
210 to 249	50%
250 and over	87.5%

Summary: The newer knowledge of the etiology in hypertension is reviewed and an attempt is made to show how this knowledge may be used in the treatment. The treatment in hypertension to be most successful must consider the probable cause or the aggravating factor and the treatment regulated accordingly. Obesity, thyrotoxicosis, the menopause, diencephalic stimulation and psychic disturbances are aggravating factors in hypertension and in some instances may even produce it. The complications

are discussed, including gastrointestinal and renal complications.

The older methods of treatment with sedatives and iodides is insufficient for most cases of hypertension. With more energetic methods of treatment much more can be accomplished. The condition of the hypertensive patient must not be considered hopeless. In most instances, life can be made easier and bearable for these patients and in some the progress of the disease may be temporarily arrested. The public must be educated that treatment for hypertension is worth while and that it takes considerable time to carry out. On the professional side we need more interest and special clinics should be provided where hypertension would be investigated and the course of the disease followed. This would in time provide a personnel, interested and acquainted with the management of hypertension who would be able to handle the ever increasing numbers of these patients coming to the clinics.

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Note: Since this paper was submitted for publication the work of Prinzmetal and Wilson (J. of Clin. Inv. 15: 63, 1936), has attracted considerable attention. They demonstrated that anesthesia with procaine of the vasomotor nerves of an arm produces the same increase in blood flow in normal persons and in those with hypertension. This tends to show that the vascular hypertonus is independent of the vasomotor nerves and that this hypertonus is an intrinsic spasm of the vessels themselves. They add that sympathectomy would therefore not abolish the vascular hypertonus that is responsible for the hypertension. It is as yet too early to make any positive statements concerning this work. Certainly it should not be taken to mean that the autonomic nervous system does not play an important part in the symptomatology of hypertension. Soma Weiss (Med. Clin. N. A. 19: 1343, 1936), in an excellent paper which every physician should read, discusses the work of Prinzmetal and its bearing on sympathectomy. He also cites the work of Peet who was able to cure several cases of hypertension by resecting the greater and lesser splanchnics and the lower dorsal sympathetic chain, including the 10th, 11th, and 12th dorsal ganglions bilaterally. In one case with a *diastolic* blood pressure of 180 mm. of Hg. the blood pressure was brought down to normal and has remained so for 2 years. This is probably too long a time to explain such a drop in blood pressure by shock alone. It would appear that if the sympathetics do not act directly by maintaining vascular hypertonus, they are nevertheless responsible for it in an indirect manner in certain instances. Weiss also mentions several other interesting points. He states that complete ablation of the thyroid gland apparently fails to influence the course of arterial hypertension. Thus confirming what is said in the early part of this paper on "thyroid hypertension." Despite the good results of Peet, Weiss is not enthusiastic about sumpathectomy in hypertension. He stresses that if one induces arteriolar dilation by nerve section, marked capillary hypertension will be precipitated and these delicate vessels are not able to withstand it.

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NARCOLEPSY
ATTACKS OF IRRESISTIBLE SLEEP

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You will pardon the use of a definition as the title of this paper. It is thus written, so that "he who runs, may read," and having read, remember.

There is a special responsibility on us to recognize those conditions which we can markedly help or cure. Despite the publication of ten articles in American medical journals on narcolepsy, the condition is not being recognized, even when a typical history is given. Narcoleptics are partially incapacitated, may be injured at any time, especially in cities, and often feel themselves set apart from society because of the embarassing situations which result from their twin afflictions of sleep attacks and emotional weakness.

Doyle and Daniels[1], Jacobsen[2], Hall[3] and Prinzmetal and Bloomberg[4], among others, have shown that the attacks can be prevented or markedly alleviated by ephedrine or benzedrine (ephedrine: three-eighth grain, two to five times daily; benzedrine: ten to forty milligrams daily). Benzedrine (benzyl-methyl-carbinamine) has proven effective in some cases not relieved by ephedrine. Although these drugs are usually necessary over periods of years, thus being substitutive, not curative therapy, children have been freed from the necessity of taking them after a comparatively short course[2].

A full discussion of etiology is given at the end of the article. For practical purposes, the cause is not known[5]. The attacks are not of hysterical origin.

On excitement, cataplectic attacks may occur. The legs buckle under and the patient collapses on the floor, if he cannot sit down at once. The emotion may result from hearing a joke or an exciting incident.

Attacks of irresistible sleep, which cannot be prevented by sleeping for ten or fifteen hours each day; which are not associated with other symptoms (as tonic or clonic movements, convulsions, vomiting, coma, sphincteric relaxation, or somnolence following the attack); are not affected by sedatives, strychnine, thyroid extract, ergotamine, caffein, atropine, pilocarpine; are

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not associated with or followed by serious symptoms or organic disease; frequently coexist with attacks of emotional weakness, may be classed as narcoleptic.

I am reporting two cases of true idiopathic narcolepsy. Symptoms had been present for twelve and seventeen years respectively, without development of signs or symptoms of glandular dysfunction, organic nervous system disease or other pathology.

Case 1. Mrs. K. N., farmer's wife, aged 32 years; complaint—attacks of sleepiness for twelve years. She feels an overpowering desire to sleep four or five times daily, cannot keep awake at such times by any effort of will; the attacks are more frequent if fatigue, warmth and quiet coexist. Nocturnal sleep is normal, but even if lengthened to twelve hours, does not prevent the attacks, nor do cold applications or exercise. After she falls asleep, it is difficult to arouse her for a few minutes, after which she gradually awakens, feeling refreshed. Her general health has been good. During the 1918 epidemic of influenza, she missed two days school, because of fever, but recovered promptly without neurologic symptoms or sequels. Menses began at 13, are regular 28 day, 5 days' duration; no dysmenorrhea since birth of two healthy children. Mother died of cerebral hemorrhage; father, brothers, husband are well. A tonsillectomy was performed four years previously by some optimistic surgeon, without affecting the narcolepsy.

Physical examination revealed only a small thyroid mass (tachycardia, exopthalmus, heat intolerance, nervousness, absent); retroverted uterus, with transverse cervical laceration; B. P. 118/80. Negative urinalysis, blood Wassermann; R.B.C. 4,200,000.

She had consulted seven physicians previously. Diagnoses had included hypothyroidism (no relief from thyroid extract); anemia; nervousness; petit mal.

Ephedrine sulphate in dose of ¾ gr. t.i.d. relieved her completely. When staying up late for a party or longer work, she found it necessary to take a fourth dose. It is interesting to note that some patients, notably asthmatics, complain of nervousness on taking one or two capsules daily. On several occasions, she has taken as many as six doses in 18 hours without ill effects.

After taking ephedrine continuously for over a year, she is in good health. Her weight is ten pounds less than before taking ephedrine, thus reversing the usual weight gain during the course of the disease. She gives an impression of mild hyperthyroidism, but examination gives no supporting evidence. It may result from the sympathetic stimulation of the ephedrine.

Case 2. Mrs. S. D., aged 38 years, wife of professional man. For seventeen years she has noticed attacks of sleep, which might occur at any time, but especially during church, and while eating, playing cards and riding. She always had time to sit down, or to stop the car, if driving. The attacks would be much worse during pregnancy. The sleep would be quiet, short (5-10 minutes); occurred six to twelve times daily.

Weakness during emotion had always troubled her. On hearing a joke, her legs would weaken and she would sink almost to the floor. If especially excited, the process would be immediately repeated.

She was very sensitive about discussing the condition, as a result of many public attacks, and being labeled as a neurotic and epileptic. She would not have come in, except that her husband had become alarmed about her frequent complaints of occipital headache and neck stiffness, both having become more frequent during the last five years. The stiffness had always been relieved by massage.

During the last four years, both types of attacks had become much less frequent and severe; the cataplexy being hardly noticeable.

Past health: always good; no illnesses or operations. She had been married fifteen years; delivered three normal children, without incident. She has gradually become overweight (twenty pounds).

Physical and neurologic examinations negative; urine negative.

She did not desire to take medication, because of the spontaneous improvement. By habitually sleeping from 10 p. m. till 8 or 9 a. m., and from 1 to 4 p. m., she could keep from having more than a few attacks, each day.

Case 3. M. G., aged 24 years, Chicago clerk, entered the dispensary complaining of attacks of weakness on sudden excitement. On hearing the fire siren at night, he would jump from his bed and start toward the window. His legs would feel so weak that he would be forced to stand or even sit down for a few minutes, until he regained control. The cataplexy was not disabling, as he could carry on his work, and was not excited during the day. Humor resulted in a little weakness. He had never suffered attacks of irresistible sleep, nor did he sleep over long during the three years that he had noticed the emotional weakness.

His past history was negative, except for measles when a child. Physical, nerologic and laboratory examinations were negative. A neurologist confirmed the diagnosis of cataplexy.

He had sought medical attention because his wife thought the condition might be serious, although it had not become progressive, nor had any other symptoms developed. On learning that no organic disease had been found, he refused medication, as he said the discomfort was slight.

Differential Diagnosis: All causes of abnormal sleep may be considered. The drowsiness of fatigue, convalescence from febrile diseases, in the course of chronic wasting diseases, of anemic young women (diurnal drowsiness and nocturnal wakefulness), and the somnolence of postepilepsy and asphyxia are usually readily recognized. Inflammations of the brain (encephalitis lethargica, meningitis, abscess, syphilis), brain tumors, concussion of brain, cerebral hemorrhage and thrombosis, poisoning, notably by opium or morphine,

diabetic acidosis, uremia, acute alcoholism, trypanosomiasis, dementia precox may be differentiated by accompanying symptoms. Fröhlich's syndrome, hypothyroidism, pyknolepsy, psychalepsy (Oppenheim's psychasthenic convulsions); "procursive," traumatic or reflex epilepsy require careful study.

Pyknolepsy ("little absences") can be ruled out because the unconsciousness lasts for only a second; there is no change of posture, nor are articles dropped; they usually occur many times daily; no cataplexy coexists.

Gelineau's original definition, if strictly applied, would have prevented many cases of somnolence, secondary to known organic or psychic cause, from filling the literature under the title of narcolepsy: "A neurosis characterized by an irresistible desire to sleep, sudden and of short duration, returning at frequent intervals" (1880). He stressed *the lack of grave symptoms and absence of consecutive lesions.*

Herewith is presented in abstract form, all the cases of narcolepsy I have been able to find in the literature at my disposal. Cases associated with brain infections, tumors, increased intracranial pressure, toxic conditions, and other definite pathology have not been included.

Cases:

REPORTED CASES

Author—Date	Sex	Age	Symptoms	Etiology	Course
Gelineau[17] 1880	M	18	Typical narcoleptic and cataplectic attacks.	Idiopathic.	No change.
Redlich[9] 1915	M	19	Narcoleptic; cataplectic. Son of alcoholic.	Idiopathic.	No relief by suggestion, caffeine.
Henneberg[39] 1916	M	35	Narcoleptic attacks for 25 yrs. after overwork. Cataplexy.	Idiopathic.	No relief by medinal or caffeine.
Singer[38] 1917	M	33	Narcoleptic, cataplectic attacks 15 years. Severe headaches with somnolence.	Encephalitis.	No relief.
Redlich[33] 1917	M	21	Occasional sleep attacks, 7 years last 1-2 days; failing memory; poor concentration.	Head trauma.	Pseudo-narcolepsy? No change.
Lhermitte[30] 1918	M	33	Persistent attacks of sleep; no cataplexy.	Shell explosion and concussion.	Pseudonarcolepsy? No relief.
Lhermitte[30] 1918	M	30	Prolonged periods diurnal sleep.	Shell shock.	8 months later, attacks unconsciousness and convulsions.
Lhermitte[30] 1918	M	23	Temporary loss consciousness and aphasia; narcoleptic attacks; no cataplectic.	Left temporal injury by shell.	No relief.
Lhermitte[30] 1918	M	26	Daily attacks of profound sleep; dreams of war terror; no cataplexy.	Left frontal area struck by shrapnel.	No relief.
Kahler[32] 1921	M	16	Narcolepsy several years after head trauma.	Head injury.	No relief.
Missriegler[8] 1924	M	19	Sleep attacks; somnambulism; facialotic; pyknolepsy; loss sexual instinct. Subsconscious desire for intercourse with mother, sister, young girls.	"Cerebral influenxa" 8 mos. previously.	Psychoanalysis relieved pseudonarcolepsy.
Goldflam[16] 1924	M	35	Narcoleptic 21 years.	Idiopathic.	Marked spontaneous improvement 9 years.
Matzdorf[14] 1925	M	19	Narcolepsy, cataplexy 2 years.	Idiopathic.	No change.
Janzen[7] 1926	M	40	Narcoleptic 26 years; hypothermia; lymphocytes 42%.	Small sella.	No change.
Janzen[7] 1926	M	24	Narcoleptic, cataplectic 6 months; prophynotic diplopia; severe cataplectic.	Normal sella, blood, spinal fluid.	Pluriglandular therapy gave much relief.
Janzen[7] 1926	M	25	Narcoleptic; prohypnotic diplopia.	Shallow sella.	Pluriglandular therapy cured.
Symonds[10] 1926	M	20	Excessive sleepiness; later Parkinsonian facies, and gait.	Influenza and encephalitis.	Parkinsonism.
Souques[35] 1927	M	22	Pahologic somnolence in seizures; no cataplexy; marked spinal fluid pleocytosis.	Head trauma.	Pseudonarcolepsy.
Seques[36] 1927	M	26	Unconscious 2 days; right hemiparesis and aphasia; increased spinal fluid pressure; neg. Wass.; 40 cells.	Shell burst. Pseudonarcolepsy.	8 months later, fewer attacks; Wassermann positive; Antiluetic therapy gave no relief.
Kluge[12] 1927	F	31	Narcoleptic attacks began during pregnancy, with fever, diplopia; pupils irregular, fixed; blood, spinal Wass. neg. Obesity.	Epidemic encephalitis?	No change.
Papastratigakis[31] 1927	M	25	Loss consciousness 3 hours; mental confusion and narcolepsy 4 months. Parkinsonian mask, cogwheel rigidity rhythmic tremor.	Head injury.	Parkinsonism.

Author—Date	Sex	Age	Symptoms	Etiology	Course
Muenzer[6] 1927	M	29	Narcolepsy; marked obesity; weakness convergence; somnolence. Later, compulsion to speak, yawning; head "heaviness."	Encephalitis.	No change.
Thrash[1] 1928	M	35	Narcolepsy and cataplexy; sleepy during day; continued increase in size head, feet, and weight (pituitary?).	Fracture nose sup, maxilla one month before.	No change after 10 years.
Haenel[27] 1928	M	39	Narcolepsy, cataplexy later. Irritable, nervous, sensitive; personality changes.	Head trauma. Pseudo?	No change.
de Villaverde[5] 1928	M	16	Emotional loss of tonus; also could be induced by suggestion.	Idiopathic.	Some improvement during observation.
de Villaverde[5] 1928	F	45	Attacks somnolence at menopause with marked obesity.	Very small sella.	No change.
de Villaverde[5] 1928	M	30	Somnolence; serous meningitis in childhood, followed by dystrophia adiposogenitalis and somnolence.	Pseudonarcolepsy after meningitis.	No change.
Pollock[32] 1930	F	25	Unconscious 3 hours; severe headache, insomnia; bloody spinal fluid. 2 weeks later, polyuria, narcoleptic attacks.	Auto accid. Pseudonarcolepsy.	No change.
Escardo[9] 1930	F	37	Psychopathlogic woman; narcoleptic attacks often coincided with weather change.	Pseudo.	No change.
Lhermitte[29] 1930	M	23	Narcoleptic and cataplectic; chills with no elevation temperature; hallucinations; R. B. C. 8,500,000.	Erythremia.	No egect from sod. salicylate intravenously, testicular extract; scopolamine valerian.
Doyle, Daniels[18] 1931	M	20	Narcolepsy, cataplexy 18 months.	Idiopathic.	Ephedrine relieved.
Doyle, Daniels[18] 1931	M	11	Narcolepsy, cataplexy 3 years.	Idiopathic.	Ephedrine relieved.
Doyle, Daniels[18] 1931	F	44	Narcolepsy 4 years; obesity; —7 B. M. R.	Idiopathic.	Ephedrine relieved.
Doyle, Daniels[18] 1931	M	25	Norcolepsy 5 years; visual hallucinations.	Idiopathic.	Ephedrine relieved.
Doyle, Daniels[18] 1931	F	57	Mild narcolepsy 10 years; —12 B. M. R.	Idiopathic.	Ephedrine relieved.
Doyle, Daniels[18] 1931	F	42	Narcolepsy 28 years; cataplexy 26 years.	Idiopathic.	Ephedrine relieved.
Daniels 1932	M	22	Narcolepsy 6 years; irritable; temper outbursts; poor judgment.	Severe head injury.	Ephedrine gave little relief; encephalogram (negative) resulted in cure.
von Szathmary[12] 1932	F	28	Explosion, unconsciousness 3 years previously; narcolepsy began in 6th month pregnancy, rapidly more severe.	Traumatic? Toxicosis?	Rapid disappearance after delivery.
Thiele[36] 1933	M	39	Somnolence; sleeps 18 hours daily, at intervals.	Head injury.	No change.
Thiele[36] 1933	M	20	Narcolepsy, cataplexy; recurrent severe headaches.	Head injury.	No change.
Jacobsen[13] 1933	M	13	Narcolepsy 6 months; slept 20 out of 24 hours, if not awakened; dull mentally; Hb 80%; after emotion, slept 36 hours; gained 30 pounds in eight months.	Normal sella and B. M. R.	Ephedrine relieved; gradually decreased none needed now.
Jacobsen[13] 1933	F	9	Narcolepsy, cataplexy 9 months, preceded by choreiform twitching; emotionally unstable; obese; delayed mental development; gained 50 pounds 9 months; B. P. 119/95.	—27 B.M.R. Small sella, normal shape.	Ephedrine relieved; now needs none.
Jacobsen[13] 1933	F	9	Narcoleptic; dull mentally; frightened easily.	B. M. R. —26. Normal sella.	Ephedrine relieved.
Thiel[35] 1933	M	15	Attacks somnolence while standing, riding, in theater; no cataplexy.	Suicidal shot in right temple.	Pseudo. No change.
Bloomberg[25] Prinzmetal 1935	M	26	Narcolepsy 1 year; obesity; female hair distribution; —19 B. M. R.	Influenza; encephalitis?	Ephedrine, benzedrine relieved.
Bloomberg[25] Prinzmetal 1935	M	21	Narcolepsy, obesity 6 years; no body hair; —23 B. M. R. Normal sugar tolerance.	Normal sella.	Thyroid gave slight relief; ephedrine relieved for few months; benzedrine, relief year.
Bloomberg[25] Prinzmetal 1935	M	19	Narcolepsy, cataplexy 3 years.	Head injury.	Ephedrine relieved for few months; benzedrine relieved.
Bloomberg[25] Prinzmetal 1935	F	24	Narcoleptic 10 years; slight cataplectic attacks; —25 B. M. R.	Idiopathic.	Pituitary sol. gave no relief; Thyroid some relief; benzed. complete relief.

Author—Date	Sex	Age	Symptoms	Etiology	Course
Bloomberg[35] Prinzmetal 1935	M	11	Narcoleptic 2 years; slept all time not actively engaged.	Idiopathic.	Thyroid, sedatives no relief; benzedrine relief.
Bloomberg[35] Prinzmetal 1935	M	34	Narcoleptic, cataplectic 10 years; unable to concentrate, poor memory; orchidectomy (embryoma) 3 yrs. previously (no metastasis); —16 B. M. R.	Skull X-ray negative; lumbar puncture negative.	No relief ergotamine and caffeine benzed. complete relief.
Bloomberg[35] Prinzmetal 1935	M	18	Narcolepsy, cataplexy 3 years; strephosymblic stammering.	Idiopathic.	Atropine, pilocarpine, no effect; benzed. relieved.
Bloomberg[35] Prinzmetal 1935	F	14	Narcolepsy, cataplexy 3 years; mitral stenosis; R. B. C. 3,000,000.	Mild head injury; neg. spinal.	Benzedrine relieved.
Bloomberg[35] Prinzmetal 1935	F	21	Narcolepsy, cataplexy 4 yrs.; congenital ptosis one eyelid.	Lab. exam. neg.	Large doses ephedrine relieved for short time; benzedrine completely relieved.
Hall[21] 1935	M	22	Narcolepsy, cataplexy; first diagnosed traumatic epilepsy.	Head injury. No fracture, normal sella.	No relief by phenobarbital, restricted fluid; Ephedrine relieved.
Gorrell 1936	F	32	Narcolepsy 10 years; slight cataplexy; R. B. C. 4,200,000.	Idiopathic.	Ephedrine relieved completely.
Gorrell 1936	F	38	Narcolepsy, cataplexy 17 years; worse during pregnancy.	Idiopathic.	Gradual spontaneous improvement.
Gorrell 1936	M	24	Cataplexy; no somnolence or narcolepsy.	Idiopathic.	No change.

NARCOLEPSY

Etiology:

A. Endocrine

1. Pituitary
   a. Acromegaly associated in cases of Dercum, Haenneberg and Pianner; relieved by pituitrin.
   b. Diabetes insipidus associated in Moreschi's case; relieved by injections pituitrin.
   c. Fröhlich's disease, polyuria and narcolepsy in Torrigianis case; cured afted removal projectile from hypophyseal recess. deVillaverde's[6] case exhibited Frölich's disease after serious meningitis in youth.
   d. Sella turcica smaller in majority of cases (deVillaverde[6], Janzen [7], Jacobsen[3], Redlich[8], Jolly, Adie, Schuller.
   e. Bowmann's, case relieved by pituitary extract.
   f. Thrash and Massee's case[9] continued to grow until thirty-five years of age (especially size feet and head).
   g. Tumors of hypophysis; attacks disappeared with radiotherapy or hypophysical therapy in some cases; Lhermitte[10], Souques[11], Baruk, Bertrand, Mensinga, Parhon and Goldstein, Bergmann, Steinhaus, Simon, Lerebouillet, Mallet and Brizard, Klippel and Weill, Herran Steinhaus. Herran and Tilney.
   h. Cushing and Jolly, Redlich[12] and Purves Stewart, Salmon[13] believe an endocrine cause, especially pituitary.
2. Hypothyroidism, believed to be cause by Lorand, Forneris, Briquet. Low B.M.R. reported by Bloomberg[4], Jacobsen[3].
3. Obesity; European authors consider obesity an endocrine disturbance; associated with narcolepsy by Lhermitte[10], Jacobsen[3], my second case; cases often gain weight rapidly during course of disease (see cases).
4. Menstruation: Ballet, Fischer, Kahler, Nevermann and Kawewijn note that attacks occurred much more easily during menstruation. deVillaverde[6] records attacks beginning at menopause, with obesity.
5. Pregnancy: von Szathmary[14] reported a case in which narcoleptic attacks began during pregnancy, became progressively worse until after delivery, then stopped.

   Nevermann and Kallewijn's case: attacks began during pregnancy. My second case was much worse during each pregnancy.

B. Traumatic
1. Redlich[8], Daniels[15,16], singer, Kurtand Echter[17], Thiele and Bernhardt[18], Hall and LeRoy[19],Lhermitte[20], Souques[11], Papastratigakis[21], Kahler[22], Pollock[23], have reported cases following trauma, as has Bloomberg[4].

C. Epileptic. This should not be considered, as narcolepsy and epilepsy have nothing in common. Salmon[13] states that "narcoleptic crises are frequent in epileptics."

D. Psychopathologic. Under this heading several typical cases have been reported, notably Missriegler's[24], which exhibited incestous desires; cured by psychoanalysis, deVillaverde's case was made worse by suggestion.

E. Toxic infective
1. Epidemic encephalitis has been accused by many writers of causing most cases of narcolepsy, though Gelineau and Redlich observed cases long before encephalitis lethargica was known. Some of these authors are: Schuster, Perrier, Lhermitte[10], Rouques, Fuchs, Kennedy, Hochwart, DiPace, Alajouanine, Baruk, Muenzer[25], Kluge[26], Bloomberg[5].
2. Meningitis in deVillaverde's case[6].
3. Influenza mentioned by Barrett, Frome, Young, Scharp and Priester and Missriegler[24].

F. Circulatory
   1. Epistaxis, Mendel's case suffered attacks when epistaxes stopped; MacNamara's case was relieved after abundant epistaxis; Hilpert noted crises of narcolepsy and cataplexy associated with nose-bleed. DiPaces' cases improved by epistaxis or severe hemorrhoidal flow.
   2. Lhermitte and Peyre[10] believe narcolepsy frequently associated with erythremia (R.B.C. 8,500,000 in their case). This theory is not supported by the literature.

G. Increased intra-cranial pressure, especially in third ventricle, tumors. (Claude, Schaeffer and Alajouanine, Claude and Lhermitte); in hypophysis (Mensinga, Parhon and Goldstein; see previous list); in infundibulum (Lhermitte, Souques, Baruk and Bertrand).

H. Hysteria—no relationship whatsoever.

I. Idiopathic, especially occuring in young males, without antecedent disease or trauma.

Conclusion: Lhermitte[10] believes it a syndrome resulting from various causes. This seems to be the logical conclusion. The region of the tuber cinereum is apparently the area of sleep regulation[27] (between the optic chiasm and mammillary bodies, close to the floor of the third ventricle). Injection of calcium chloride into this region in animals resulted in deep sleep lasting for thirty to forty minutes; potassium chloride injected in the same area brought on overactivity. Salmon[13] believes narscolepsy a result of angiospasm of the infundibular sleep regulating center. Doyle and Daniels[1] suggest that cataplectic seizures may be due to inability of suprarenals to deliver epinephrine quickly enough during periods of emotional stress. In Daniel's case[16], a negative encephalogram gave relief after ephedrine had failed. We recently had a severe case of idiopathic epilepsy (confirmed by neurologist), completely and dramatically relieved by a negative encephalogram; have noted in the literature treatment of epilepsy by air injections into the spinal canal or ventricles. The resemblance between the two diseases as regards etiology, i. e., traumatic, idiopathic, cerebral tumor, et cetera,—explosive nature of symptoms, occurring frequently for a period of years, and relief by drugs, indicates that advancing knowledge of cerebrospinal fluid circulation and pressure, and of brain physiology may solve both problems.

Is Narcolepsy Rare, or Is Just the Diagnosis? Because of the unusual symptoms of narcolepsy, I submitted a brief paragraph on it, to Colliers magazine. Following publication, I received letters from 43 narcoleptics in 19 states. Of this group, 38 had not been diagnosed, despite visits to a number of physicians. Clinical guesses included: neurocirculatory asthenia, overdrinking of milk, hysteria, epilepsy, disbelief in the patient's statements and endocrine deficiency. 29 were males, all except 3 were under 40 and a number presented definite obesity. Preceding factors included: influenza, scarlet fever, head injury, tonsillectomy and poliomyelitis. A clear history of catalepsy was given by 26 patients. The diagnosed cases have had much relief from Benzedrine sulphate, with few undesirable symptoms, although one Californian reported taking up to 110 mg. (10 tablets) on some days. These cases will be followed up by their local physicians and a full report made later.

Yours,

R. L. Gorrell, M.D.

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COMPARATIVE VALUE OF PURINE DERIVATIVES IN TREATMENT OF ANGINA PECTORIS

Morton G. Brown and Joseph E. F. Riseman, Boston (*Journal A. M. A.*, July 24, 1937), compared the value of six theophylline, four theobromine and one caffeine preparation in the treatment of angina pectoris in seventeen patients by using the usual clinical methods and also by measuring the amount of work under standardized conditions which could be done before inducing cardiac pain. The optional dosage was usually the maximal amount that could be given without causing severe gastric distress. Not all patients respond to purines. The sodium acetate derivatives of theophylline and theobromine were the most effective preparations. Patients who did not respond to these drugs usually showed a good response to theophylline with calcium salicylate, which was the next best preparation. Theophylline, theophylline with ethylenediamine, theophylline mono-ethanolamine, theophylline with methyl glucamine and theobromine with calcium salicylate were about equally effective but were less so than the aforementioned preparations. Theobromine and theobromine with sodium salicylate were distinctly less effective, while caffeine citrate was of little or no value. Sedatives are of value in the treatment of patients with angina pectoris, but their combination with a purine does not result in an increased exercise tolerance. Theobromine with sodium acetate is by far the least expensive of the effective purine preparations.

Society Proceedings

GREENE COUNTY

Regular Meeting of the Greene County Medical Society was held in the parlor of the Christian Church, White Hall, Sept. 10, 1937. This was a joint meeting of the Green County Medical Society and the Dentists of the County.

Meeting called to order at 8:00 p. m. by the President, Dr. C. O. Bulger. Reading of the minutes was dispensed with. The applications of Drs. Robert Piper of White Hall and Rollo B. Sarginson of Kane for membership, were received and referred to the Board of Censors.

Dr. Wm. L. Hanson of East St. Louis was introduced. Dr. Hanson gave us a very practical and instructive paper on "Infections of the Mouth and of the Throat." The lecture was illustrated by lantern slides.

Business session resumed. The Resolution of Senator J. Hamilton Lewis to Socialize medicine was read and discussed.

On motion by Dr. Baldwin, seconded by Dr. E. W. Thomas the secretary was authorized to cast the unanimous vote of the Society in opposition to any effort to socialize medicine.

Dr. A. K. Baldwin was appointed censor to fill the vacancy caused by the death of Dr. E. E. Jouett.

Eleven members, ten dentists and four visitors were present.

Marriages

ALEXANDER O. BIRGERSON, Chicago, to Miss Eleanor B. Mueller of Hinsdale, Ill., July 31.

HENRY N. HARKINS, Chicago, to Miss Jean Trester of Hobart, Ind., June 19.

NICHOLAS LUCIA, Braidwood, Ill., to Miss Elizabeth J. Yeats of York, Pa., at Collegeville, Pa., June 6.

WILFRED J. NOWLIN, Farmer City, Ill., to Mrs. Neva Whitford Jones of Champaign, in Chicago, June 15.

RALPH O. PETERSON to Miss Viola Gellin, both of Chicago, June 24.

WILLIAM F. SEIFERT to Miss Kathleen Lewis, both of Chicago, in June.

HERMAN A. STRAUSS to Miss Jean Heller, both of Chicago, August 2.

Personals

Dr. LeRoy H. Sloan, associate professor of medicine, University of Illinois College of Medicine, has been appointed professor of medicine, effective September 1. Dr. Sloan graduated at Rush Medical College in 1917.

Dr. Cral J. Uthoff addessed the 16th Annual Scientific and Clinical Session of the American Congress of Physical Therapy at Cincinnati, Ohio, September 21 on "Transvesical Electrosurgery of Prostate and Vesical Neck."

Dr. Sidney O. Levinson gave a paper on "Poliomyelitis," before the Iroquois County Medical Society, September 7.

Dr. Paul L. Schroeder gave an address on "Behavior Problems in Children" before the Effingham County Medical Society, September 14.

Dr. P. F. Schneider gave a paper on "Progress in Obstetrics and Gynecology" before the Bureau County Medical Society, September 14.

Dr. Clark W. Finnerud gave a talk before the Kankakee County Medical Society, September 9, on "The Diagnosis and Treatment of Common Skin Diseases."

Dr. William Bernard Raycraft gave a talk on "Infantile Paralysis," before the Parent Teacher Association of Hollywood, September 14.

Dr. C. R. G. Forrester addressed the members of the Will-Grundy County Medical Society at their first meeting held in Joliet, September 22.

Dr. Ralph A. Kordenat and Ed. L. Cornell gave the program before the Stephenson County Medical Society at Freeport, Ill., September 23. The subject of Dr. Kordenat's address was the "Acute Abdomen," and Dr. Cornell spoke on "Obstetrics."

Dr. J. T. Gernon of Chicago and Dr. Paul H. Harmon of Springfield addressed the Jo Daviess County Medical Society, at Stockston, August 26, on "Treatment of Infections of the Upper Urinary Tract and Poliomyelitis" respectively.

Dr. Max Thorek presented a motion picture and gave an address Wednesday, September 8th at the University of London, England on "A Report of 342 Cases of Electrosurgical Obliteration of the Gallbladder."

News Notes

—The Sangamon County Medical Society was addressed in Springfield, September 2, by Drs. Burton Lyman Stewart on treatment of urogenital tract infections with sulfanilamide; William DeHollander, "Postoperative Pulmonary Collapse: Roentgen Aspects," and George H. Fleischli, "Fractures About the Elbow." All are from Springfield.

—The *Medical News* of Rock Island County made its appearance in August as the official publication of the Rock Island County Medical Society, with Dr. George W. Dryer as editor in chief. Dr. Warren H. Cole, Chicago, addressed the county medical society, September 14, on "Pathogenesis, Diagnosis and Treatment of Chronic Cholecystitis."

—Thirty deaths and 225 cases of bacillary dysentery have occurred at the Dixon State hosital for mental defectives since the first of the year, the newspapers reported September 10. At that time eighty-one persons were under quarantine and all the 3,200 patients in the hospital were being examined for symptoms and signs of the disease.

—Dr. Amos W. Ball, Rushville, was guest of honor at a dinner given by the Rushville Rotary Club, August 10, to celebrate his completion of fifty years in the practice of medicine. He was presented with a Rotary pin. Speakers included Drs. Everett P. Coleman, Canton, councilor of the fourth district of the state medical society; Don W. Deal, Springfield; Perry H. Stoops, Ipava; Henry O. Munson and Frederick D. Culbertson. Dr. Ball graduated in 1886 from Missouri Medical College, St. Louis.

—Fifteen persons have been named by the governor to a newly created advisory board of the division for handicapped children, state department of public welfare. Dr. Paul H. Harmon is director of the division and members of the committee include Drs. Henry B. Thomas, Edward L. Compere, Philip Lewin, Julius H. Hess, Edwin W. Ryerson, Robert A. Black, Philip H. Kreuscher, all of Chicago; Frank J. Jirka, state health director; Gerald M. Cline, Bloomington; Fred S. Etherton, Carbondale; Rolland L. Green, Peoria; Harold M. Camp, Monmouth; Charles S. Skaggs, East St. Louis; Miss Mable Dunlap, Moline, and Mark Penney, state board of vocational rehabilitation, Springfield.

—Northwestern University Medical School sponsored a symposium on industrial disease and hygiene at Thorne Hall, September 27-28. The following program was presented:

Dr. Samuel M. Feinberg, Rôle of Allergy in Industry.

Dr. Marion B. Sulzberger, New York, Rôle of Allergy in Industrial Dermatoses.

Dr. Leroy U. Gardner, Saranac Lake, N. Y., Some Phases of the Pathology of Silicosis.

Dr. Eugene P. Pendergrass, Philadelphia, The Healthy Chest and the Modifying Influences of Silicosis and Silicosis with Infection.

Clarence W. Muehlberger, Ph.D., Toxicology of Industrial Solvents.

Dr. Alice Hamilton, Boston, Some Recent Developments in the Field of Industrial Solvents.

Dr. Robert A. Kehoe, Cincinnati, Industrial Lead Poisoning.

Dr. James A. Britton, medical director, International Harvester Company, concluded the after-

noon's program with a round table discussion on occupational disease. At the dinner in the evening, Mr. O. E. Mount, president of the board of governors, department of occupational disease at the university, presided and the speakers, Dr. Irving S. Cutter, dean of the medical school, discussed "The Rôle of the Medical Unit in Industry," and Frances Perkins, secretary, U. S. Department of Labor, Washington, D. C., "Health in Industry."

A group of neurologists and psychiatrists met in the state's attorney's office, August 27, to discuss the problem of dealing with persons belonging in the group of mental disorders not covered by the degal definition of insanity and feebleminded who may be apprehended for some crime. The group consisted of Drs. Peter Bassoe, H. Douglas Singer, Clarence A. Neymann, Francis J. Gerty, David Slight, Paul L. Schroeder, David Rothman, Lewis J. Pollock, Ralph C. Hamill and Harry R. Hoffman. There has been a recent increase in sex crimes. Under the present statutes sex criminals not insane or feebleminded may receive only short sentences, and they frequently repeat their crimes. A subcommittee consisting of Drs. Pollock, Gerty, Hoffman, Schroeder and Rothman was appointed to prepare a definition of the mental disorders under consideration, particularly of sexual psychopathy. It is to recommend to the committee of the whole plans for statutes which, as in the case of the Briggs law of Massachusetts, would provide means for the early recognition of sexual and other psychopaths. Such laws would also provide for commitment of these persons to a hospital for observation and diagnosis, as does the Colorado law of 1924 dealing with insanity as a defense, and for treatment and isolation of vicious and antisocial characters until they are pronounced cured by a suitable board of psychiartists.

Deaths

Rueben Jay Atwood, Chicago; Chicago Medical College, 1890; served during the World War; aged 72; died, July 2, of carcinoma of the lip.

D. Watson Grear, Anna, Ill.; Missouri Medical College, St. Louis, 1890; a Fellow, A. M. A.; formerly coroner of Union County; for many years on the staff of the Southeastern Hospital for the Insane, North Madison, Ind.; aged 74; died, June 5, of angina pectoris and chronic myocarditis.

Henry Arthur Greenebaum, Chicago; Rush Medical College, Chicago, 1929; a Fellow, A. M. A.; assistant in medicine, University of Illinois College of Medicine; associate attending physician to the Cook County Hospital; aged 34; died, June 24, of meningitis and pyelonephritis.

Barnet Lemchen, Chicago; St. Louis University School of Medicine, 1908; member of the Illinois State Medical Society; for many years connected with the Chicago State Hospital; aged 66; died, June 18, of coronary thrombosis.

William Riley Pastor, Dixon, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; member of the Illinois State Medical Society; died, June 25, in a local hospital, of cerebral hemorrhage.

George Henry Simmons, Chicago; Hahnemann Medical College, Chicago, 1882; Rush Medical College, 1892; practiced medicine in Lincoln, Neb., 1884-1899; and in 1896 founded and edited the *Western Medical Review* which carried policies on medical education later developed under the American Medical Association. He was secretary of Nebraska State Medical Society from 1895 to 1899.

The Board of Trustees of the A. M. A. in 1899 elected him General Secretary, a position he filled till 1911, and Editor, 1899-1924. As secretary he was largely responsible for the reorganization of the Association, making eligibility dependent on membership in the State and constituent county societies.

As editor he succeeded Dr. John M. Hamilton when the subscription list numbered about 10,000. In 1901 the Journal began publishing annually information about medical colleges and later listed the results of medical examinations. In 1905 the Council on Medical Education and Hospitals was organized, followed by the Council on Pharmacy and Chemistry with its chemical Laboratory and Department of Propaganda for Reform, later the Bureau of Investigation.

The American Medical Directory, now in its 14th Edition, appeared first in 1906. Publication of the Archives of various specialties began in 1908 with *Internal Medicine*. The quarterly cumulative index of leading medical publications began in 1901; later combined with the Index Medicus. *Hygeia* was developed in 1923.

In 1921 Dr. Simmons was awarded the Distinguished Service Medal by President Harding following service as Major in the Medical Reserve Corps during the World War. In 1924 he became Editor and General Manager Emeritus.

Many of his editorials appeared annonymously but from time to time he published articles and exercised a decisive influence with officials and committees in promoting the growth of the Association.

His death occurred in St. Lukes Hospital, Chicago, September 1, 1937, aged 85, from cholecystitis.

Fred M. Wilbur, Galesburg, Ill.; Barnes Medical College, St. Louis, 1903; aged 60; died suddenly, June 23, of carcinoma of the esophagus and paralysis agitans.